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ABSTRACT

Responses to a survey of university public service programs of benefit to state and local governments were received from 70 individual campuses, and one systemwide office, representing 79 of the 133 NASULGC member institutions and 41 of the 50 states. The survey asked for (1) information on institutes of government and on technical service units existing within or outside such institutes, and (2) information on organized research institutes or centers whose activities related to areas of major public interest. Major areas of concern included energy policy, transportation, land use, power plant siting, coastal zone management, building and housing codes, radioactive wastes and radiation protection, health care systems, air and water quality programs, and noise regulation. Respondents identified types of services provided, including contract research, reference services, bill drafting assistance, testimony at hearing, training sessions, seminars, and personnel exchanges. Respondents also rated a number of barriers to more cooperative relationships between state universities and state governments. (LBH)

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THE ADDED DIMENSION

STATE AND LAND-GRANT UNIVERSITIES SERVING STATE AND LOCAL GOVERNMENT

By Ione Phillips

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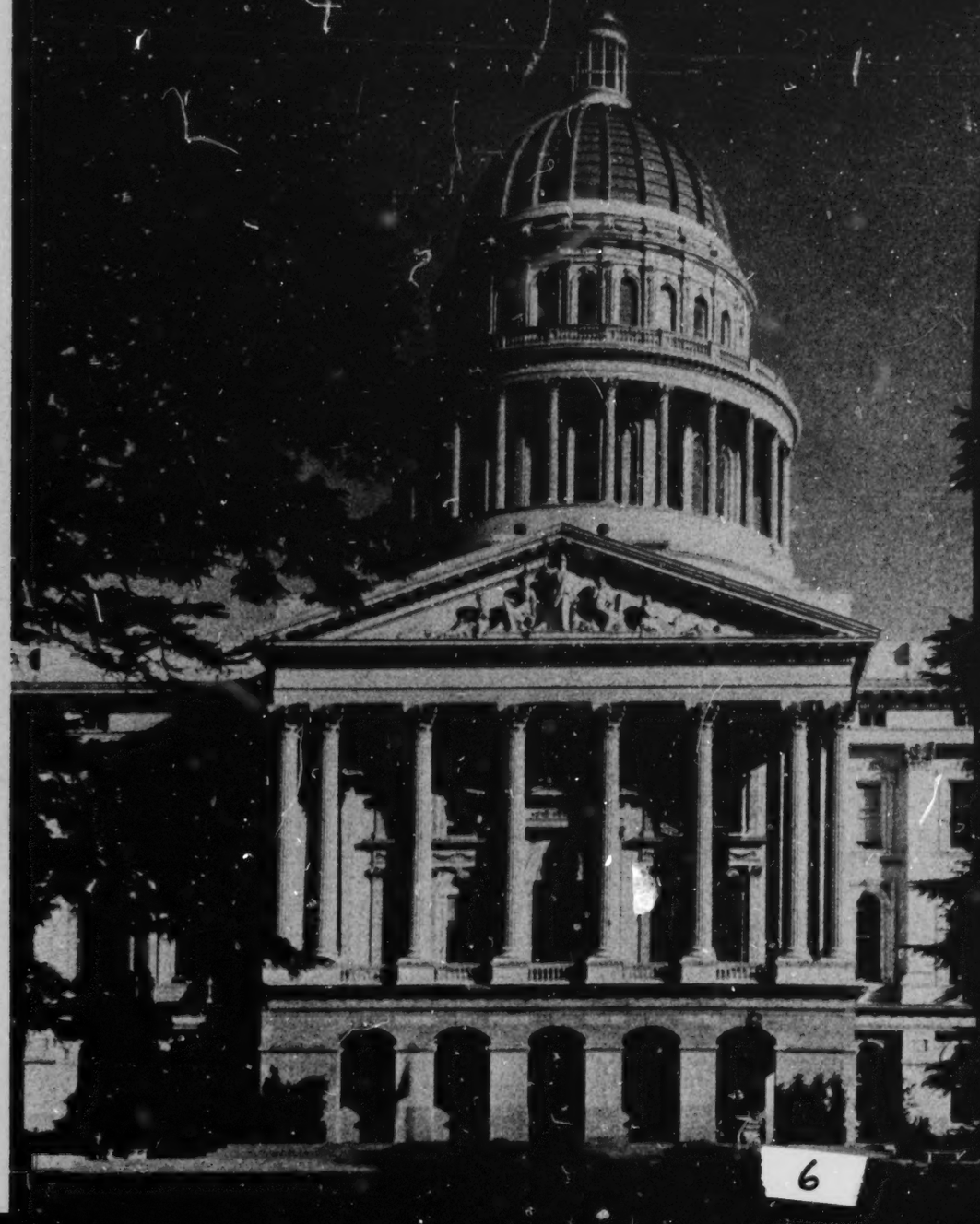


A group of University of California, Santa Barbara students and their professors were giving legislators at the California state capitol in Sacramento a look into the future. They were demonstrating, with modular and portable solar water heaters, the possibilities for utilization of larger, more functional solar energy conversion systems.

They set up their low-cost laboratory within five minutes walking distance of the people who must grapple with tough energy problems and decide on the right course of action for the state. It was a serious effort to bring some of the research findings of its world-renowned state university to California policymakers who direly need such technical information as a basis for the decisions that they must make.

The on-site demonstration was one of a small but significant number of such presentations to legislators made possible by a modest University of California effort known as the Regents' Research Dissemination Program.

Through the program, faculty members are invited to submit proposals for taking the results of their research to policymakers via seminars, on-site demonstrations, publications or whatever other mechanism the researcher determines is best to present his information. Initiated in January, 1975 by the university's Office of Public Service Programs, the undertaking has now made possible more than 50 projects which have transmitted crucial information on a variety of topics to the legislators who make vital statewide decisions in these areas. Information disseminated via the program has been on topics as diverse as housing, pesticides, corrections, health planning and sanitary engineering, to name a few.

Funded entirely by non-state funds, the program shows, educators hope, the commitment of the state university to make new knowledge available as quickly as possible to lawmakers who need it as a basis for decision-making. It is a message that has not always been clear between campus and capital.

An Implicit Goal

For state universities and land-grant colleges, serving the people of their respective states has always been an implicit goal. Founded by public initiative and with public funds, their educational mission from the start has been broader than that of any other type of higher education institution in existence. Public service has been and continues to be the added dimension.

The land-grant colleges, which were established to teach agriculture and the mechanic arts, along with other more traditional subjects, quickly learned that the people who needed to be taught were not just the students in the classroom. As research yielded new knowledge in these embryonic areas, the colleges were quick to share it with people in the field.

By 1887 Congress had passed the Hatch Act, which established an agriculture experiment station in every state in connection with a land-grant college. The results of research carried out in these stations were transmitted by "extension" courses to farmers who were unable to come to the campus. In 1914, Congress recognized these early efforts with the passage of the Smith-Lever Act providing funds to set up extension programs in every state to disseminate agricultural research findings.

The extension service system established across the country as a result of that act remains today as the nation's leading university public service model.

A Growing Demand

The need for public services of an educational nature has increased steadily through the years. In no arena has the growing demand for new knowledge been more evident than in state and local government. As public problems have become more complex, the need for knowledge of a scientific and highly technological nature on the part of policymakers has become more critical.

Legislators, looking for this information from every possible source, have at times felt frustration with the responses they receive from their state universities. Public universities, on the other hand, seeking to serve their states from their unique capacity as institutions of higher education, have felt that lawmakers do not understand their special functions or recognize the strengths they possess.

No Mention

President Dale Corson of Cornell University noted that his university's extensive activities as the land-grant institution of the state of New York were not even mentioned in a section entitled "A System Responsive to Community Needs" incorporated in the Regents 1974 Progress Report on the Statewide Master Planning effort in the state. Such an oversight is, unfortunately, far from uncommon.

In California the state legislature considered, but did not pass, a bill which would take money from the University of California's organized research program for allocation to a state foundation, which would then make the money available to a wide range of groups. The foundation, in effect, would have replaced the university in making decisions concerning the funding of a variety of research projects.

The motivation behind the proposal supposedly stemmed from the belief that university research programs did not meet state needs.

These two incidents would seem to illustrate the lack of understanding that often exists between state governments and state universities.

A Major Potential

Yet the complexities of the problems facing the nation today demand closer cooperation than ever before. There is an awareness, on both sides, of the necessity for increased mutual efforts. In a 1972 report, *Power to the States: Mobilizing Public Technology*, the Council of State Governments stated:

"The judgment of this study is that the state universities have a major potential to bring applied science to the service of state governments and that this potential is not being effectively tapped."

The same year the National Association of State Universities and Land-Grant Colleges (NASULGC) sponsored a conference dealing with Institutions of Higher Education as a Resource in the Solution of National Problems.

One of the recommendations coming out of this conference, which was attended by both university and government representatives, was:

"Institutions of higher education, having resources and capabilities, both social and technological, and which are potentially and actively of value in the solution of national problems, have a responsibility to serve the public welfare beyond on-campus teaching and research. To enable these resources and capabilities to be more effectively utilized, institutions must relate productively to external groups and agency organizations and associations to provide service. To this end, institutions of higher education, their organizations and associations must develop effective leadership and procedures for themselves as well as establish effective liaison with external groups and agencies."

This recommendation was endorsed by NASULGC with a pledge to devote its full efforts to carry such activity forward.

Need for Understanding

An awareness of the need for a clearer understanding of what universities are doing to assist government in grappling with weighty issues, especially those which are highly technical, led NASULGC to conduct a survey of member universities concerning their activities in this area.

This publication deals with results of the survey as well as an overview of state and land-grant university public service activities geared toward governmental needs. It features, in addition, a number of in-depth descriptions of some of the more extensive programs under way across the country.

THE SURVEY

Responses to the survey of university public service programs of benefit to state and local governments were received from 70 individual campuses, and one systemwide office, representing 79 of the 133 NASULGC member institutions and 41 of the 50 states.

The survey was based on two premises. The first was that help is most easily obtained from a university when a formal organization exists to facilitate contact. The second was that government, and especially state legislators, have the greatest need for university assistance on issues which require a large amount of scientific and technological information as a background for decision-making.

With these basic assumptions in mind, the survey specifically sought information on organized university units which had the potential to provide the type of information for which government officials felt the greatest need. The first section of the survey asked for information on institutes of government and on technical service units existing within or outside such institutes. A technical services unit was defined as "a unit set up to provide technical advice and counsel to governmental agencies."

The second section of the survey dealt with organized research institutes or centers whose activities related to areas

of major public interest. The areas of interest were identified for survey respondents with an additional category for listing other units which respondents felt conducted research which had a direct application to governmental problems.

Major Areas of Concern

Major public interest categories were devised to encompass the issues for which government officials currently feel the greatest need for supportive information of a technical nature. The categories included:

Energy policy

Transportation

Land use planning, land reclamation, comprehensive zoning

Power plant siting

Coastal zone management

Building and housing codes

Radioactive waste disposal, radiation protection

Health care systems

Air/water quality programs

Noise regulation

The section on institutes of government and technical service units also asked for information concerning on-going research being done by these units in the designated public interest categories.

Types of Services

Respondents were asked for specific information on the types of services provided by these various units, including the branches of government receiving the services. The types of services cited were:

Contract research	Training sessions
Reference services	Seminars
Bill drafting assistance	Personnel exchanges
Testimony at hearings	

The branches of government specified in the survey included the governor's office, state agencies, the legislature and city/county government.

Information on funding and staff size of technical services units was also requested.

Barriers to Cooperation

The final two sections of the questionnaire dealt with faculty assistance and university policy. The section on university policy asked respondents to rate a number of "barriers" to more cooperative relationships between state universities and state governments in terms of the seriousness of the problem as they perceived it on their campuses. Respondents were also asked to rate their overall university efforts to serve state government.

Subsequent chapters of the book present survey findings in detail.

Survey Participants by State

Alabama	Alabama A & M University Auburn University University of Alabama, University
Arizona	Arizona State University University of Arizona
California	University of California
Colorado	University of Colorado
Connecticut	University of Connecticut
Delaware	University of Delaware
Florida	Florida A & M University Florida State University University of Florida
Georgia	Georgia Institute of Technology
Idaho	University of Idaho
Illinois	University of Illinois
Iowa	Iowa State University University of Iowa
Kansas	University of Kansas
Kentucky	Kentucky State University University of Kentucky
Louisiana	Louisiana State University, Baton Rouge
Maryland	University of Maryland
Massachusetts	University of Massachusetts, Amherst
Michigan	Michigan State University University of Michigan Wayne State University
Minnesota	University of Minnesota
Mississippi	University of Mississippi
Missouri	Lincoln University
Montana	University of Montana
Nevada	University of Nevada, Reno
New Hampshire	University of New Hampshire
New Jersey	Rutgers University
New Mexico	University of New Mexico

New York	City University of New York Baruch College Brooklyn College City College Graduate School and University Center Hunter College John Jay College Medgar Evers College York College* Cornell University*
North Carolina	North Carolina State University
North Dakota	North Dakota State University University of North Dakota
Ohio	Kent State University Miami University Ohio State University
Oklahoma	Oklahoma State University University of Oklahoma
Oregon	University of Oregon
Pennsylvania	Pennsylvania State University Temple University University of Pittsburgh
South Carolina	Clemson University South Carolina State College
South Dakota	South Dakota State University University of South Dakota
Tennessee	University of Tennessee, Knoxville
Texas	Texas A & M University Texas Tech University University of Texas, Austin
Utah	University of Utah
Vermont	University of Vermont
Virgin Islands	College of the Virgin Islands
Virginia	University of Virginia Virginia State College Virginia Polytech. Institute
Washington	University of Washington
Wisconsin	University of Wisconsin, Madison

*Sent in only faculty handbook.

CHAPTER ONE

A Look at the Problems

If government officials are aware of their need for the type of information their public universities are so well equipped to provide and if university officials are aware of their obligation to serve state government—

Why are there problems in building linkages that work for all concerned?

Nothing comes through so clearly in talking with university representatives about service to government as the delineation of problems in accomplishing this goal. Five major barriers to smooth university-government technology transfer emerged from interviews with educators across the country who are intimately involved in university public service activities for state and local government. They were:

Five Major Problems

- A university community, composed of individual and relatively independent scholars, does not lend itself readily to organization. Success of university-government joint ventures depends on the willingness of the scholars to cooperate.
- Incentives for faculty to participate in public service activities are not as strong as incentives to do research and write about it.
- Where organizations exist for facilitating the transfer of relevant

scientific and technical information from the university to public policy-makers, they are generally too under-staffed to make an impact.

- Governmental needs, especially those of legislators, are usually crisis-oriented. Universities deal primarily with long-range research and are not equipped to respond quickly to immediate needs.
- The delivery of research information to policymakers who can use it costs money. Funds to do this are generally unavailable.

Not Insurmountable

Despite the existence of these problems, university administrators and faculty members interviewed in connection with this report did not view any of them as insurmountable. The magnitude of these problems varied considerably from campus to campus and what was a problem in one place might not be a problem in another.

However, since each of the problems was mentioned frequently by people involved in government public service programs, their impact seemed significant enough to deserve special attention in this publication.

Ranking Barriers

Survey participants were asked to rank each of 11 possible barriers to more cooperative relationships between state-supported universities and government in terms of their own

experience. There were four possible ratings: Major impediment, moderate impediment, minor impediment and no impediment.

Money problems far outstripped any other factor as the number one barrier, according to survey responses. Fifty-nine universities said that each of the two listed impediments related to money was at least somewhat troublesome. Thirty-six of those universities cited a lack of *internal university* funds to support expansion in activities directed to state and local governments as a major impediment. Thirty-five institutions said that a lack of *state* funds to support university-based activities targeted to state governments was a major impediment.

Problems involving faculty participation ranked second but far behind the money issue in terms of the number of universities who viewed them as major impediments. Thirteen universities said that a lack of adequate advance notice to free the faculty from other university commitments was a major impediment. An institutional reward system, pertaining to rank, tenure and salary, geared toward teaching and research rather than public service, was listed as a major impediment by 11 universities. A large number of respondents also viewed these two problems as moderate impediments. Eighteen said that lack of adequate advance notice was a moderate impediment while 30 participants viewed the reward system as a moderate impediment.

Major Impediments

None of the other listed impediments were regarded of major significance by more than eight survey participants and only two were considered to be even moderate impediments by more than 14 respondents. No professional (peer) reward for activities relating to state governments was listed as a moderate impediment by 31 respondents, but only six universities viewed this as a major impediment. A distrust of public officials by academicians was cited as a moderate impediment by 29 respondents although only five institutions considered this to be a major barrier to cooperative relationships.

Several other possible problem areas were considered to be minor impediments by a sizeable group of respondents. Faculty distrust of the "political" arena was regarded as a minor problem by 33 respondents with 17 other campuses regarding it as more than a minor problem.

Limited central administration authority to channel faculty members interests into problems of state and local government was listed as a minor impediment by 21 institutions with 22 others regarding it as more serious in nature.

The impediments which were considered the least significant by survey respondents included: Physically difficult access between the site of the university and the location of the

Barriers to More Cooperative Relationships Between State Universities and Governmen.

Barriers	Total Respondents	Major Impediment	Moderate Impediment	Minor Impediment	No Impediment
Lack of internal university funds to support expansion in activities directed to state and local governments	62	36 insts. 58.6%*	12 insts. 17.2%*	11 insts. 19.0%*	3 insts. 5.2%*
Lack of state funds to support university-based activities targeted to state government	62	35 56.9%	13 22.4%	11 15.5%	3 5.2%
Lack of adequate advance notice to free the faculty from other university commitments from state branches seeking faculty assistance	61	13 22.8%	18 28.1%	19 29.8%	11 19.3%
Institutional reward system (rank, tenure, salary) is geared to teaching and research	61	11 18.0%	30 49.2%	9 14.8%	11 18.0%
No professional (peer) reward for activities relating to state governments	62	6 10.3%	31 48.3%	14 22.4%	11 19.0%

*Percentages represent portion of total respondents checking the category.

Barriers	Total Respondents	Major Impediment	Moderate Impediment	Minor Impediment	No Impediment
Limited central administration authority to channel faculty members' interests into problems of state and local government	60	8 13.3%	14 23.3%	21 35.0%	17 28.4%
Faculty preference for working with federal, rather than state, agencies	61	6 10.5%	11 15.8%	18 28.1%	26 45.6%
Public officials' distrust of academicians	62	5 6.9%	29 48.3%	22 34.5%	6 10.3%
Physically difficult access between site of university and location of state capital	62	4 6.5%	10 16.1%	18 29.0%	30 48.4%
Faculty distrust of "political" arena	62	3 5.2%	14 24.1%	33 51.7%	12 19.0%
Government officials' dissatisfaction with inability of faculty members to provide answers in layman's language	62	2 3.2%	13 21.0%	25 40.3%	22 35.5%

state capital; government officials' dissatisfaction with the inability of faculty members to provide answers in layman's language and faculty preference for working with federal, rather than state, agencies.

(The chart on the preceding pages lists all possible barriers to cooperative relationships cited in the survey and shows the number of participants rating the impediment in each of the four categories.)

The problems delineated in survey responses and in interviews with persons involved in university/government public service programs can be divided into four categories: Organization, money, faculty and legislators.

Organization

The need for formal university-based organizations to facilitate the transfer of knowledge from campus to government is generally accepted by both groups. However, many university spokesmen noted that the organizations of this type which currently exist on their campuses are not adequate for the task they must carry out.

If the unit is not placed at a high enough level in the university to have administrative backing for what it does, the chances of getting widespread university cooperation are slim. Units which are set up by, and identified with one school or college of the university, are effective only in dealing with requests pertaining to their specific area of knowledge, participants have found.

Several faculty members who have been involved in experimental efforts concerning the transfer of scientific and technical information to state legislatures have also recommended strongly that universities should provide access to resources through the universities' administrative unit for research. Their experience led them to believe that projects in the area of policy research should be differentiated from the universities' continuing education or public information programs.

It is safe to assume that there would not be universal agreement on this procedure and that the selection of the proper administrative unit might vary from campus to campus. However, there seemed to be little disagreement that placement must be at a high, institution-wide level.

Size Problems

Even when the unit is properly placed and has the backing and blessing of the university administration, problems of staff size may still affect the type of service which is provided.

The University of California offers an example of this problem. The central administration of the nine-campus institution has had a systemwide university public service programs office since 1971. Currently operating under the academic vice president, the office has support from the necessary university officials and has been highly successful in carrying out some specific programs. (See Chapter 6.) Yet its scope is necessarily limited by the fact that the office consists of one man.

For a university with a research program of the magnitude of California, this program, as it is currently set up, represents only a start. Yet to mount a more extensive dissemination effort would require a much larger expenditure of funds.

Money

Any discussion of organization problems eventually evolves into a discussion of money problems since a shortage of funds is usually the reason why organizations remain inadequate to meet the magnitude of the demand for information.

With a few notable exceptions, state universities have been unsuccessful in obtaining state support to operate government public service units. The stringency of current state budgets has been a factor in this situation along with a lack of understanding of the amount of money required to carry out an effective knowledge transfer program.

Universities, which have felt the effect of tight state budgets in their current operations, have been unable to eke out funds from existing programs to provide the type of service which government units feel they should receive.

Universities with the largest and best-funded technical services units, based on responses to the NASULGC survey, tended to be those universities which had been engaged in such activities for a long period of time. These universities had been able to establish a broad base of support prior to the years of economic stringency, and though funds may not have increased substantially in recent years, these proven programs have fared better than programs started more recently at other universities.

Faculty

Although problems of organization and money must be solved before any university can mount a successful government public service effort, no program will work without the cooperation of the faculty members who are engaged in the pertinent research.

This is less of a problem than it once might have been, judging from survey responses. Ivory tower elitism is rapidly vanishing from the campus. Most faculty members, especially younger ones, view public service activity as a valuable experience, for a variety of reasons.

Interviews with faculty members who have become involved in cooperative university/government endeavors showed that they valued such experiences because:

They provided new material for use in student courses.

They brought a new focus to the way the professor viewed his/her work.

They offered an opportunity to call the attention of policymakers to problem areas needing attention when research had uncovered that type of information.

Few Incentives

University incentives aimed at encouraging faculty participation in public service activities are not widespread, according to survey responses. Only 25 universities said that they provided any type of incentive.

The major incentive cited by these respondents was a consideration of public service activities in faculty promotion, tenure and salary decisions. Eighteen institutions indicated that they provided such an incentive.

In addition, 26 institutions said they accepted public service as a substitute for publications in tenure considerations. Conversations with faculty members, however, seemed to show that public service still does not carry equal weight with research and teaching when decisions pertaining to advancement are made. Therefore, many younger faculty can't allow themselves the luxury of public service.

"I just can't afford to take time away from research and writing," said one young assistant professor with a keen interest in public service. "I think some balance is needed."

Financial Benefits

Only six universities indicated that they provided direct financial benefits to faculty members. Three of these universities—the University of Kentucky, Louisiana State University and Michigan State University—said that they allowed overload pay to permit faculty members to provide services to state and local governments. The University of Alabama and the University of Massachusetts at Amherst said that they permitted increases in a faculty member's academic year salary for public service activities. Alabama has a university-established scale of released time for public service.

The University of Minnesota provides money to free faculty members from their regular teaching loads and to support research assistants involved in public service activities.

The majority of universities do not require faculty members to obtain special permission or release to take part in government service activities.

Responses to three questions concerning permission requirements are shown on the following page.

A few comments on the question showed that the policy was not always clearcut. For example, Louisiana State University said that the question of permission was dependent on the amount of time required by the activity.

John Jay College of the City University of New York said permission was not

required, but the faculty member must inform his or her department personnel committee. The Pennsylvania State University requires notification of the dean or administrative officer, and prior to acceptance of a state or federal position with an elected official, the position must be discussed with the Vice President for Public Affairs

Legislators

Relating to state legislators has been the most difficult problem for universities in serving government, university spokesmen are quick to admit. Survey results in Chapter 2 concerning the groups served by universities back up this statement.

Eight campuses with technical services units reported that these units provided no services for the legislature. In almost all instances, activities considered of benefit to lawmakers were minimal.

A basic difference in the approach of the two groups is responsible for much of the difficulty.

"Legislators think in terms of this year or next. They want results right now," noted Donald Swain, academic vice president of the University of California. "The university, on the other hand, is more likely to be mounting sustained programs that may not pay off for five years."

Universities view their research missions as two-fold involving both basic and applied research with the former still receiving first priority, Swain observed.

"The primary interests and needs of legislators relate only to applied research," he continued.

In many states, such as California, where the legislatures have large staffs, the university is called upon for information very infrequently, according to university spokesmen.

Robert Hutchison, executive director of the Institute for Public Service of the University of Tennessee, one of the largest university units providing technical services to government among all state universities, noted that the institute is far from satisfied with its service to the state legislature. Despite the fact that approximately three-fourths of the institute's budget of almost $3 million comes from state appropriations, Hutchison notes that the legislature does not call on the institute very often.

Most contact is with individual legislators. Often legislative requests are "crash things," Hutchison noted.

"We want to find a more effective fashion of working with the state legislature," he added.

Hutchison's comment sums up the wish expressed by university personnel over and over across the country. In general, the academicians are not satisfied with their present efforts and want to improve the service they perform. The question is simply how.

A few small efforts such as the Legislative Technology Project being carried out at the Alabama state capitol by Auburn University and the University of Alabama are attempting to come to grips with the difficult problems involved in serving lawmakers. The Alabama program, which will continue through 1977, has been designed to determine how universities can transfer technical knowledge to lawmakers in states which do not have legislative staffs.

Specialized approaches such as this should help bridge the informational gap which has existed in many places for so long.

Permission Requirements for Faculty Public Service Activities

	Number of Institutions		
Activity	*Yes*	*No*	*No Response*
Act as advisors in state agencies	21	39	0
Testify at public hearings	8	52	0
Become members of state commissions and task forces	19	39	2

CHAPTER TWO

Vehicles for Cooperation

Knowing where to turn for help in a large complex organization, which most state and land-grant universities have become, has been a major stumbling block impeding the smooth flow of information from campus to government.

The need for internal contact points for those who want to use the resources of the university is vital. This was a major conclusion of the 1972 NASULGC conference dealing with Institutions of Higher Education as a Resource in the Solution of National Problems.

The survey of university programs of benefit to state and local governments was designed primarily to determine where linkage systems exist. Findings show that increasingly universities have tried to facilitate the transfer of information by setting up formal units which have as one major goal matching up university expertise with government's need to know. Thirty-nine universities participating in the NASULGC survey, or 54.9% of the respondents, said that they provide technical services to state and local governments through some type of formal campus organization.

Involving Institutes of Government

The most common approach is to incorporate a technical services unit into the university's institute of government. These institutes, which are widespread on state university campuses, are basically organized research units whose activities relate to the operations of state and local government. Adding the extra dimension of public service to government within such institutes has been a natural progression as the university commitment to governmental problem-solving has grown.

Thirty-one of the 39 universities which noted that they have formal technical service units house them within the institute of government. Twenty-four of these universities had separate technical service units within the institute while seven others noted that technical services were a function of the institute although not specifically assigned to one unit.

There were only 14 universities with institutes of government which did not carry out some type of technical services activity. Three of these universities had a separate technical services unit.

Separate Units

Eight other universities had set up technical services units outside of an institute of government. In addition, seven of the universities which provided technical services through an institute of government also reported an additional unit of this nature outside the institute.

(The table on the following pages lists all institutes of government cited by survey respondents as well as showing where special units exist to provide technical services to governmental agencies, whether within or outside an institute of government.)

Products of the Seventies

The establishment on state university campuses of technical services units with the specifically defined task of providing scientific and technical information to government has come about largely within the last decade. With the exception of a few pioneering institutions, most technical services operations are products of the Seventies, still grappling with problems of funding and anonymity.

The size and scope of technical services units and/or activities at institutions responding to the NASULGC survey varied widely. Included among the reported units were operations as diverse as the Engineering Experiment Station of the Georgia Institute of Technology, with a budget of $8 million and a staff of more than 350, and the Center for Political Research at the City University of New York, Brooklyn, with an annual budget of only $10,000.

For the most part, the units were small in terms of both staff size and budget yet were managing to carry out a wide array of activities of benefit to government.

Budget Range

Among the 22 institutions which provided information on budgets for their technical services operations,

12 were operating with annual funds of $100,000 or less. Five institutions had budgets of $101,000-500,000 and one institution (University of Delaware) reported an annual budget of $737,000. The remaining four institutions had budgets over a million dollars.

In addition to Georgia Tech, they were: University of Alabama, $3,552,810; University of Tennessee, Knoxville, $2,900,000 and University of Texas, Austin, $2,347,700.

Staff Size

Budgets, of course, affect staff size. The number of full-time equivalent personnel involved in technical services activities at NASULGC institutions was quite small with a few exceptions at institutions with the best-funded technical services programs. The number of FTE employees reported by survey respondents ranged from the high of more than 350 at Georgia Tech to a low of 1⅓ at the University of Nevada, Reno.

Among the 32 universities providing information on technical services staff, 20 had ten or less employees working in this area. Six institutions had staffs ranging in size from 11-20, two had staffs between 21-50 and four had staffs of more than 50 employees.

Despite the correlation of budgets and staff size, the range of services offered by technical services units was not always directly related to these two factors.

University technical services operations are able to do a lot with modest funding because they can draw on resources from throughout the campus, often free of charge.

Types of Services

What types of assistance do technical services units provide? Although no two are set up in exactly the same manner, there are many similarities in the services they offer in keeping with their strengths as units of institutions of higher education. For survey purposes, possible types of services were divided into seven categories. The categories were:

- Contract Research
- Reference Services
- Bill Drafting Assistance
- Testimony at Hearings
- Training Sessions
- Seminars
- Personnel Exchanges

More than half of the 39 universities which reported that they provided technical services through formal units were involved in at least five of these activities. The most common type of service, cited by 34 institutions, was contract research. Thirty-two institutions noted that they offered training sessions for government personnel and the same number reported that they conducted seminars for government employees. Reference services were part of the technical services activities for 30 institutions.

Testimony at hearings was a less common type of activity, reported by only 22 institutions and bill drafting assistance and personnel exchanges were even less prevalent, cited by 15 and 10 institutions respectively.

Five institutions participating in the survey provided all seven kinds of technical services activities listed on the questionnaire. These institutions were:

University of Alabama, Tuscaloosa
University of California (among all campuses)
University of Idaho
University of Kentucky
University of Texas at Austin

Local Governments Benefit Most

City and county governments were more likely to be the beneficiaries of university technical services activities than any other type of governmental unit, and the governor's office was the least likely recipient of liaison efforts.

There were, however, individual variations depending upon the type of service being offered. For example, contract research, the most common activity of technical services units, was done most frequently for state agencies, with 29 institutions reporting that they were engaged in such research.

Universities with Formal Organizations Providing Services to Government

Technical Services Unit Within Institute of Gov't.	Technical Services Unit Outside Institute of Gov't.	Institution	Institute of Government
•	•	University of Alabama, University	Bureau of Public Administration
•		Arizona State University	Center for Public Affairs
	•	University of Arizona	Institute of Government Research
	•	University of California Central Administration	
•	•	Berkeley	Institute of Governmental Studies
•		Davis	Institute of Governmental Affairs
		Irvine	Public Policy Research Organization
•		University of Connecticut	Institute of Public Service
	•	University of Delaware	
•		Florida State University	Florida Resources Environmental Analysis Center
•		University of Florida	Bureau of Economic and Business Research
	•	Georgia Institute of Tech.	
•		University of Idaho	Bureau of Public Affairs Research
		University of Illinois	Institute of Government and Public Affairs
•		University of Iowa	Institute of Public Affairs
	•	University of Kentucky	
•		Louisiana State University, Baton Rouge	Governmental Services Institute, Division of Continuing Education
•		University of Maryland	Bureau of Governmental Research
•*		University of Massachusetts, Amherst	Institute for Governmental Services
•		Michigan State University	Institute for Community Development and Services†

Technical Services Unit Within Institute of Gov't.	Technical Services Unit Outside Institute of Gov't.	Institution	Institute of Government
		University of Michigan, Ann Arbor	Institute of Public Policy Studies
	•	University of Minnesota, Twin Cities	School of Public Affairs
•*		University of Mississippi	Bureau of Governmental Research
•		University of Montana	Bureau of Government Research
•*		University of Nevada, Reno	Bureau of Governmental Research
•*		Rutgers University	Bureau of Government Research
•			Eagleton Institute of Politics
	•	University of New Mexico	Institute of Public Law and Service Bureau of Government Research Institution of Social Research and Development
		City University of New York	
		Baruch	New York State Legislative Institute
•	•	Brooklyn	Center for Political Research
		John Jay	Department of Government
•		Graduate School & University Center	Office of Urban Policy and Programs
•	•	University of North Carolina	Institute of Government
•*		University of North Dakota	Bureau of Governmental Affairs
		Ohio State University	School of Public Administration

35a

35b

Technical Services Unit Within Institute of Gov't.	Technical Services Unit Outside Institute of Gov't.	Institution	Institute of Government
•		Oklahoma State University	Center for Local Government Technology
		University of Oklahoma	Bureau of Government Research
•		University of Oregon	Bureau of Governmental Research and Service
•*	•	Pennsylvania State Univ.	Institute of Public Administration
•		University of Pittsburgh	Institute of Training and Organizational Development
	•	Clemson University	
		University of South Dakota	Institute of Public Affairs
•		University of Tennessee, Knoxville	Institute for Public Service
•		Texas A & M University	Center for Urban Programs, Texas Engineering Experiment Station
		Texas Tech University	Center for Public Service
•	•	University of Texas, Austin	Lyndon B. Johnson School of Public Affairs
•		University of Utah	Institute of Government
		University of Vermont	Government Research Center
•		College of the Virgin Islands	Bureau of Public Administration
•*	•	University of Virginia	Institute of Government
		University of Washington	Institute of Governmental Research

*Technical services are provided but not through separate administrative unit.

†Has broader mission but does include government.

Testimony at hearings was done most frequently at the direct request of state legislatures with 21 of the 22 institutions which cited this type of service indicating that it was done for the legislature. Fifteen of the 22 noted that they testified at hearings for city/county governments and 13 said that they testified for state agencies. Only nine institutions cited the governor's office as a beneficiary of testimony at hearings.

As might be expected, bill drafting assistance was also done most frequently for the state legislature. Eleven of the 15 institutions which indicated that they had been involved in this type of activity had provided this service for the state legislature while nine had drafted bills for city and county governments.

Among the ten institutions which had been involved in personnel exchanges with government, six institutions reported that they had been between the university and city and county governments, and six institutions reported that they had conducted such exchanges with state agencies. Four institutions had participated in exchanges with the governor's office, and two institutions had carried out personnel exchanges with the state legislature.

City and county governments were the groups most frequently served in regard to the three other types of activity cited in the questionnaire.

(The chart below shows the types of services offered by institutions reporting on their technical services activities.)

A more detailed look at the major types of activities in which technical services units are involved illustrates the diversity of university enterprises established specifically to meet informational needs of policymakers.

Contract Research

Contract research looms large in any description of university technical services activities. It accounted for 50 percent or more of the funding for 14 of the 21 institutions providing information on their budgets for technical services.

Because it offers a way to get over the major barrier plaguing universities in their efforts to provide government with technological information—a lack of funds—it is understandable

Activities of Technical Services Units

Type of Activity	Total Institutions	Governor's Office	State Agencies	Legislature	City/County Governments
Contract Research	34	17	29	16	28
Reference Services	30	19	22	19	27
Bill Drafting Assistance	15	3	6	11	9
Testimony at Hearings	22	9	13	21	15
Training Sessions	32	12	24	18	30
Seminars	32	13	27	18	30
Personnel Exchanges	10	4	6	2	6

that it would have reached its place of preeminence in these operations.

Thirty-four of the 37 universities providing detailed information on their technical services activities reported that they were involved in contract research. The two major contractors among government units were state agencies, for which 29 had done research, and city and county governments, cited by 28 institutions. Slightly less than half of the respondents had done contract research for either the governor's office (17) or the state legislature (16).

Applied research directed at specific governmental problems is a direct extension of the basic research thrust of these universities. In addition to bringing the university's research capability to bear on public problems which need solving, it also pays rich dividends to those who carry out the research, survey respondents noted. It gives these faculty members "real world" experience, in the words of one faculty member, and provides material which enriches the curriculum, especially for schools of public policy.

Engineering Experiment Station

Among survey respondents, the Engineering Experiment Station of the Georgia Institute of Technology offers the major example of how the contract research approach can be utilized to fulfill governmental needs. Four-fifths of the station's 1974-75 budget of $8 million, increased to $10.5 million in the 1976 fiscal year, came from contract research, 70 percent from state and federal contracts and ten percent from industrial contracts. The station has grown to its present dimension, occupying three buildings on the Georgia Tech campus and seven field offices across the state, since World War II, primarily as a result of these contracts.

The station carries out its extensive research operations through a number of departments and divisions. Its staff includes 350 full-time employees and an additional 250 part-time workers. Areas of concern include: Mechanical design and development, industrial chemistry, high temperature materials, nuclear applications, bioengineering, analytical instrumentation, solid waste utilization, water quality chemistry, communications, radar and electronic systems and industrial and economic development.

State Obligation

As it has worked on wide-ranging scientific and technological problems of nationwide significance, the Engineering Experiment Station has not ignored its obligation to the state of Georgia. Since 1950, it has received an annual appropriation from the state, currently for $2 million, to be used specifically in encouraging the economic development of Georgia.

This overall objective is fulfilled primarily through the Industrial Development Division, which was established in 1956, making it the oldest and one of the largest university-affiliated industrial and economic development groups in the country. It includes an industrial extension service to meet the technical, information and other needs of industry and local community and development groups.

Although the station does not really have any formal program for providing technical services, according to Director Richard Johnson, it is often hard to distinguish between research and service in EES activities.

Solving Specific Problems

State and local agencies have funded a number of research projects to solve specific problems. Some recent examples of activities of this nature include:

Development of a concept for a tornado and storm detection, tracking and warning system for implementation in the state.

Research for the Kaolin and Processing Committee of the Georgia House of Representatives on the development and use of Georgia kaolin in the production of alumina. The committee hopes to attract industry to commercially produce the alumina from Georgia's abundant kaolin resources.

At times contracts may call for EES to provide some specific service in addition to research. For example, EES has been named the Georgia Productivity Center. This designation has involved the station in a variety of activities from energy conservation education to providing detailed designs of better tools.

One effort has brought together a team of researchers to work on ways to put the Georgia poultry broiler production industry back in its leading national position. A pilot project with three small cities in the area of municipal services productivity has been another activity.

The station also provides short-term technical assistance in response to inquiries on specific problems, on an informal basis. Responses of this type are provided as a public service when no more than several days of effort are required.

Training Programs

Another logical service activity for educational institutions is the provision of training programs for public officials. This is an easy extension of teaching activities to a specialized group of consumers—a type of service which state and land-grant universities have provided since their earliest days.

Training programs are undoubtedly the way in which universities are currently reaching the broadest array of policymakers. Although the survey did not ask for information on the number of government officials served through training programs, it is safe to assume that the number reached in this fashion by all state and land-grant universities is in the hundreds of thousands.

Survey findings did show that all but five of the 37 universities providing information on types of technical services activities offered training programs. Actually this probably does not adequately depict the number of institutions involved in training programs. Many universities offer such programs through their continuing education divisions or through an academic college or department, rather than through a formal technical services unit.

Municipal and county officials were the primary beneficiaries of training programs cited in the questionnaire. Programs for this category of public officials were offered by 30 of the 32 universities. State agencies were cited as beneficiaries of training programs by 24 institutions and more than half (18) of the respondents said that they provided training sessions for the state legislature. Only 12 universities had provided training sessions for the governor's office.

Gamut of Educational Possibilities

Training programs run a wide gamut of educational possibilities. They may provide highly specialized training for a particular group such as budget officers or city managers or they may be set up to acquaint officials with the specifics involved in implementation of a new law. They may be oriented toward general management education or toward self-evaluation.

A look at what is being done by several institutions illustrates the variety of possible approaches.

In 1959, Rutgers University established the Government Services Training Program as a unit of its Extension Division to cooperate with the university's Bureau of Government Research in providing training programs for persons serving in New Jersey state and local government.

A recent brochure listed the availability of 67 specific courses in 11 major areas of government concern. Areas included: Financial Management, Assessment and Collection of Taxes, General Administration, Planning and Zoning, Housing and Urban Development, Code Enforcement, Management, Public Recreation, Public Safety, Public Policy and Public Works.

In addition to these courses, which are offered throughout the state as requested by government personnel, the staff is set up to assist public agencies and private groups in response to inquiries. Staff members frequently participate at meetings of local organizations as speakers and panelists on municipal charter revision, governmental finance and other subjects.

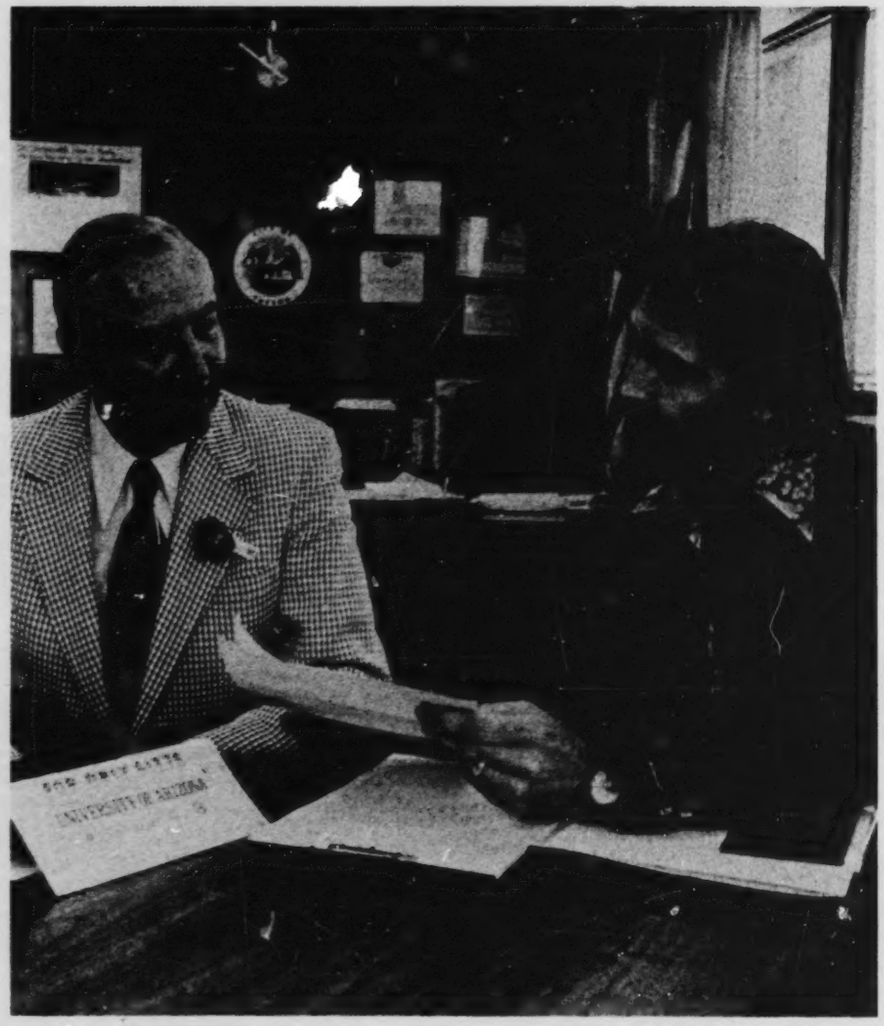
Different Approach in Maine

The University of Maine at Orono Bureau of Public Administration (BPA) takes a completely different approach to training for government officials, concentrating on public management education. When the bureau observed its tenth anniversary in February, 1976, it estimated that it had presented more than 500 separate public management education programs for state, county and municipal government since its founding. The bureau, which was established by the state legislature, also provides applied research on broad governmental issues and public management problems in Maine.

The bureau actually offers three types of training programs. Open enrollment programs, offered as workshops, seminars, institutes and certificate courses, develop individual skills in the various functions of government. In one semester, for example, the university offered seven open enrollment programs. One was a six-session supervisory management course held in Portland and the others were one- and two-day workshops, five of which were held in Augusta the state capital. Topics of the workshops included: How to conduct a meeting, the supervisor's role in performance appraisal, motivating public employees, women in government, time management and basic labor relations.

The second type of offerings is in-house programs, tailored specifically to the organizational needs of municipalities

Thomas E. Doran, Coordinator of Community Programs for the University of Arizona (R), confers with Tucson mayor, Louis Murphy. Doran maintains a desk in City Hall.



and state agencies as defined by the people in the organization. In 1975, in-house training was provided for 14 municipalities and five state agencies.

Capacity Building

In 1975 the bureau began a new emphasis on capacity building programs which involve personnel in an assessment of their own agency with assistance from BPA.

"Capacity building programs are based on the idea that personnel within an organization know intuitively more than anyone else what problems need correction and what irritations and issues exist," explained BPA director, Irvine Marsters, Jr.

BPA personnel help them confront those issues and deal with present and future needs themselves.

"In short," Marsters said, "capacity building is a problem-centered approach of a longer-term nature, as opposed to a one-shot skill development approach."

Four municipalities plus the State Division of Motor Vehicles and the Maine Public Broadcasting Network took advantage of this new program approach in 1975.

Understanding Laws

Help in acquainting officials with specifics of new laws they must follow or implement is a focus of many training programs. The Center for Government Training (CGT) of the University of Tennessee Institute of Public Service has been especially active in this area in regard to both state and federal laws. For example, in cooperation with the Tennessee Municipal League, CGT designed and delivered 16 training programs dealing with the federal Housing and Community Development Act of 1974. More than 760 municipal officials participated in the program.

Michigan State University recently completed the presentation of a Michigan Local Governmental Bookkeeping Course in 13 Michigan cities, with the cooperation of city, county and state governments.

The course was designed by the university's Institute for Community Development to provide newly appointed local government staffers with a working knowledge of bookkeeping as it applies to the Michigan Uniform Governmental Accounting System.

National Models

At times a program developed by a state university for use within its own state is so successful that it is adopted by other states as well. This is the case with a series of basic and advanced public purchasing seminars which was begun in late 1974 by the University of Texas Lyndon B. Johnson School of Public Affairs.

The series has been so successful in an area where little formal training had previously existed that the National Institute of Governmental Purchasing proposed that it be replicated nationwide.

Seminars

Although the NASULGC survey distinguished between training programs and seminars, in actual practice the two are often synonymous. Training sessions frequently take the form of seminars. For example, the LBJ School at the University of Texas, Austin recently sponsored a professional development seminar introducing high-level local government executives, such as county auditors and city managers, to new concepts in management.

In addition to these sessions, however, seminars and other types of conferences and one-day meetings deal with topical issues such as energy, the environment, educational issues, transportation, housing and countless other subjects of concern to government.

There is no state or land-grant university in the country that does not sponsor some sessions of this type each year. The total number of meetings which impact on governmental issues is virtually endless. In addition to those sponsored by technical services units and institutes of government, meetings which relate to concerns of policymakers and policy-implementers are sponsored by schools and colleges within the university, by continuing education units, by agricultural

extension services of land-grant universities and by organized research units. Sessions generally deal with the most topical issues of the day and often are sponsored jointly by some governmental agency.

Typical Meetings

Here are only a few examples of meetings, held within the past 12 months under the sponsorship of state and land-grant universities:

28

In October, 1976 the University of Missouri, Rolla, in cooperation with the Governor's Missouri Energy Council, sponsored the state's third annual Conference on Energy on the Rolla campus. The conference was originally organized by an associate dean of the school of engineering at the height of the energy crisis in 1974. At that time he was also serving as the governor's science advisor and chairman of the Energy Council.

The purpose of the annual conference is to provide social scientists, scientists and engineers a means for rapid communication of their most recent research in the field of energy and to offer practical solutions to energy related problems for government and industry.

Former governor Christopher Bond was one of the speakers at the three-day meeting along with a large number of specialists in the field. The number of technical papers presented at the conference has grown each year. In

1976 there were 140 papers presented to the 600 participants, which included university faculty and students and representatives from industry and government.

In Maine the effect of the 200-mile limit on the state's large fishing industry was the topic of a three-day Fishermen's Forum sponsored by the University of Maine at Orono's Sea Grant program with the support of the Maine Department of Marine Resources and the fisheries organizations of the state. The forum was the outgrowth of a study of the Maine fishing industry directed by an associate professor of economics at UMO.

Workshops focused on industry marketing and political problems created by passage of the limit. Governor James Longley also addressed the forum on "Economic Development for the Maine Fishing Industry."

State land-use policy was the topic of a conference sponsored by the University of Texas LBJ School and the Texas Advisory Commission on Intergovernmental Relations. This especially topical issue in this land-rich state was discussed by state officials and by nationally recognized experts in land-use matters.

Reference Services

Most reference services provided by state and land-grant universities for government officials are fairly informal operations. They generally involve only one or two persons who take questions which come in and either find answers for the caller or refer him or her to the person on campus who can provide the needed information.

A few universities have developed computer-based reference services. Funds from a Regents' Dissemination grant were employed by the Public Policy Research Organization at the University of California, Irvine to design a computer-based process for developing an inventory of policy-related research for that campus.

Computer-based operations will undoubtedly become more prevalent in the future and offer real possibilities for improved flow of information for large multi-campus institutions with numerous research institutes and hundreds of faculty engaged in study of a wide array of subjects.

CHAPTER THREE

Two Success Stories

The pitfalls in running a successful technical services program are numerous, as emphasized in chapter one, and many universities are still struggling to get their programs off the ground. But there are some highly successful operations across the country that can serve as models for states which are looking for guidance.

This chapter will feature two of the most productive technical services programs currently in existence at state universities. The approaches employed in the two programs are entirely different but both have been successful in meeting governmental and private needs for technical assistance within their respective states.

The fact that both programs are working effectively underlines an important guideline for the establishment of a technical services program. The operational plan should be determined primarily by the needs of the individual state and the existing capabilities of the university in question rather than by what has worked elsewhere. Nevertheless, there are many common problems and mutual goals, and one university can certainly learn from another as it struggles to come up with the best possible system for working within its own unique hemisphere.

Personal visits by staff consultants to help solve specific problems are at the core of all operations for the Institute of Public Service of the University of Tennessee. Here Municipal Technical Advisory Service consultant, Lewis A. Fortham Jr., prepares for such a visit.

1. Happy Victim of Events

A variety of circumstance have brought universities to their various levels of service to government with good luck figuring heavily on the side of many of the institutions which currently have the most sophisticated operations.

"We were the happy victim of a wonderful series of events," Robert Hutchison, director of Tennessee's Institute of Public Service (IPS) readily admits in relating the circumstances that led to the establishment of the first unit of the institute in 1949.

The events in Tennessee that all came together at once began with the Tennessee Municipal League, which, according to Hutchison, wanted "to get at the expertise of the university." Working with the political science department on the university's Knoxville campus, the two groups came up with the idea of a Municipal Technical Advisory Service (MTAS) as a vehicle for transferring university knowledge to municipalities.

At that time the governor and state legislature were trying to get approval for a state sales tax. In order to win enough support from urban legislators to get the tax through, it was agreed that one-eighth of all income would go to the cities on the basis of population. A proportion of this was to go to the university for MTAS, and the state agreed to appropriate an equal amount of funds. By 1975-76, the cities of Tennessee were receiving $30 million from the state sales tax (one-eighth of the first two cents) and the share coming to MTAS was $500,000.

Institute of Public Service

The involvement of the university in meeting the specialized needs of business and governmental officials for information and technical assistance has grown from that point to its present-day structure comprised of five operating units. The Institute of Public Service itself did not come into existence until 1971 when it was created by the UT Board of Regents with a mandate to coordinate and promote the university's assistance efforts for cities, counties, state government, business and industry.

Prior to the birth of IPS as a coordinating body, the university had set up three more units with important, and quite distinct, public service missions. They were the Government-Industry-Law Center (GILC), the Center for Industrial Services (CIS) and the Center for Government Training (CGT).

The first two were established in 1963, at the request of the governor's office and the state legislature.

"This was considered to be the state's entree to the university," Director Hutchison explained.

Breaking New Ground

At that time both the university and the legislature were breaking new ground with a foresight possessed by

few other states or universities. Not everyone in either body was certain that the idea could or should work.

"When I left the School of Business in 1963 to join the Government-Industry-Law Center, many of my colleagues looked at me and said 'poor fellow'," Hutchison recalls with a laugh.

The public service thrust of land-grant universities in agriculture was not an area that other units of the university were emulating back then, Hutchison pointed out. Yet he believes that the steps his university took in 1963 were exactly the right ones at the right time.

"Had we not been able to move when we did," he noted, "I think we would have run past the place of ever doing it. The state has taken up many of these activities in other places."

What the university did was to involve itself on a wide scale in service to government and industry—from helping a company design a system for control of the firm's inventory and production to conducting studies of statewide problems for the legislature.

They were quick to establish the person-to-person basis for service which they still feel is the key to their success. To achieve this personal approach, activities were not limited to the Knoxville campus. Regional offices were set up throughout the state with staff personnel going out from them to the people who required assistance.

In 1967 the university extended its services through a new Center for Government Training. The center was created to offer training and career development courses for city, county and state personnel.

A Coordinated Approach

When IPS was established in 1971 it took these four institutes into its fold along with three other existing activities which were either entirely or primarily supported by federal funds. These programs were: The Civil Defense Education Program, State Agency for Title I of the Higher Education Act of 1965 and the Technical Assistance Center, which was established in 1970 to support activities which will stimulate economic growth in 48 eastern Tennessee counties. The latter activity is funded primarily by a grant from the Economic Development Administration.

The institute was also to work closely with the UT, Knoxville Transportation Center, which was created in 1970 to encourage interdisciplinary research and promote public service efforts in the field of transportation. A similar relationship came into being with the Environmental Center, which was established on the Knoxville campus in 1972. IPS provided approximately 50 percent of the support for both centers.

In 1973 the last unit of the center, the County Technical Assistance Center,

Center for Government Training personnel at the University of Tennessee trained city officials of Murfreesboro, Tenn. in construction of a playground, using discarded materials. With help from volunteers of all ages, the playground was constructed in three days.

was created by the General Assembly to provide the same type of assistance to county officials that MTAS provided for city officials. It is operated in cooperation with the Tennessee County Services Association.

One further change came about in 1974 when the legislature transferred the original mandate given the Government-Industry-Law Center to the Institute. This established IPS in state statute as the liaison between UT's technical assistance resources and the organizations or individuals who needed services. GILC, which had been a unit of IPS, was merged into the institute that year.

Funding problems during the past year have necessitated some changes in the IPS operation. Support for the Civil Defense Education program has been phased out because of the discontinuation of federal support. The state Agency for Title I has been transferred to the university's Division of Continuing Education. The two research centers will no longer receive any support from IPS after June 30, 1977, although the institute will continue to work with both centers on projects of mutual concern.

Not Satisfied

Despite the recent changes, IPS still maintains comprehensive responsibilities in the area of public service which place them in an enviable position. Problems of coordination and impact faced elsewhere are at a minimum in the IPS approach. Yet, as expressed earlier, Director Hutchison is far from satisfied with the service IPS provides to the state legislature, which he characterizes as very self-sufficient.

In Tennessee there is a large legislative staff, which does much on its own. Most of the work done by IPS for the legislature involves responding to requests from staff members and carrying out studies for the Legislative Council, a group which is set up to carry out studies on important issues between sessions.

"Higher education is too big a competitor for the dollar," Hutchison observed. "We are a little suspect unless we are dealing in very technical matters. Part of the hestitation of legislatures to call on us is that they don't want to become obligated."

Hutchison offers one word of advice which he considers to be the key to successful work with policymakers:

"We are very cautious never to go in and say this is the answer. We give them the best alternatives but realize they have been elected to be decision-makers."

Some capsule descriptions of activities of some of the IPS units will give a better idea of the scope of IPS in serving Tennessee.

Service to Cities and Counties

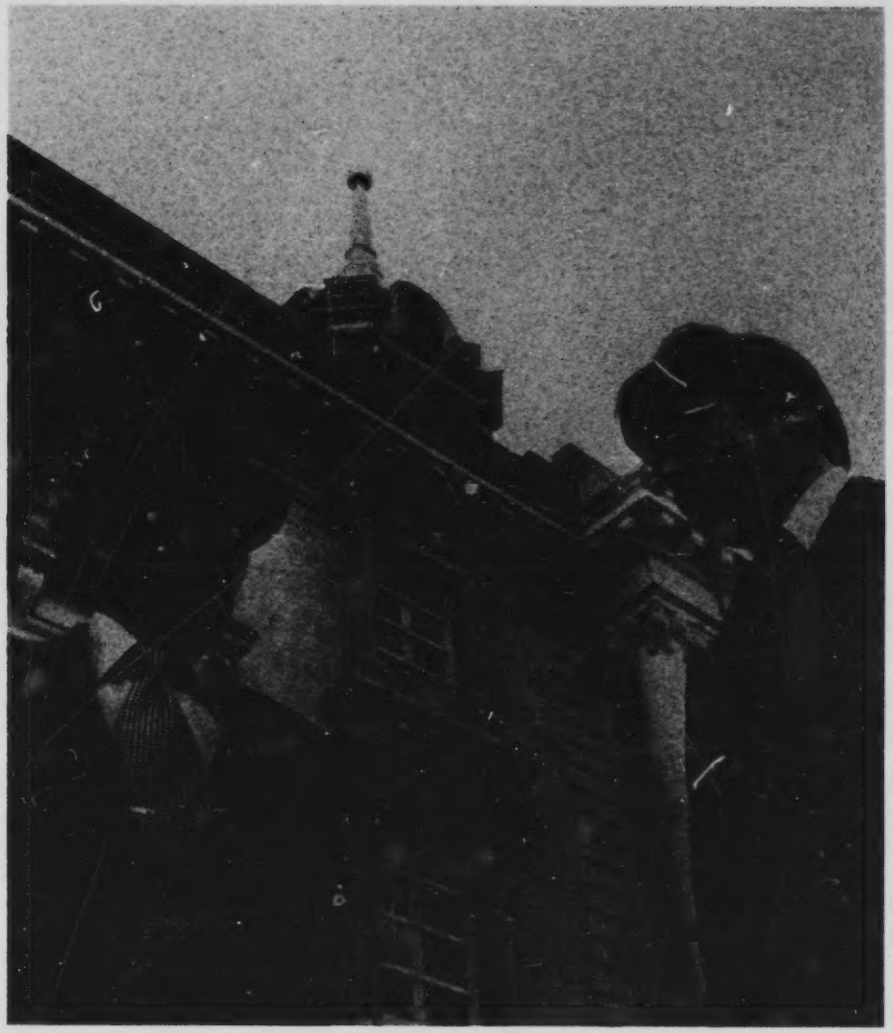
Both the Municipal Technical Advisory Service and the County Technical Assistance Service have staffs scattered throughout the state to facilitate personal assistance to the groups they are set up to help. Staff members have all had previous experience in city or county government—a job prerequisite. MTAS is headquartered in Knoxville while CTAS is headquartered in Nashville, the two major IPS sites. However, staff members also work out of regional offices maintained in Chattanooga, Cookeville, Jackson and Johnson City.

There are two types of staff members connected with these units—generalists and specialists. The generalists spend their time in the field, providing varying types of assistance according to need. In one case it may be the preparation of an annual report, in another it may involve help in applying for a grant or aid in reorganization of some unit.

The generalists are supported by specialist consultants who work in particular disciplines including legal services, finance and accounting, engineering and public works, ordinance codification, personnel administration, law enforcement, public health and environment and information.

In short, the two units can provide just about any type of service that a city or county in Tennessee might

Joe M. Williams, right, field advisor for the University of Tennessee County Technical Assistance Service, pauses on the Maury County courthouse lawn for a conversation with County Judge Taylor Rayburn Sr.



request. Here are some specific examples of work done by the units in one year:

Municipal Technical Advisory Service

- Aided in reorganization of the Finance Department of the City of Bristol, including installation of a reporting system and computerization of utility billing procedures and payroll procedures for all city employees.
- Analyzed the effects of federal wage and hour legislation on the budget for the fire department of the City of Dickson.
- Helped develop policies for extending water and sewer lines and analyzed revenues and costs of the water and sewer system for the City of Fayetteville.
- Provided information on available alternatives for better management of municipal operations to the board of aldermen of the Town of Monterey. In addition, charter amendments were drafted to implement the board's preferences.
- Prepared a policy and procedures manual for the City of Martin Police Department.

During this year (1974-75) MTAS completed work on 622 projects and the library answered 711 reference questions and supplied 239 ordinances and 1,548 other materials.

The service also maintains an extensive publications program, including production of an annual directory of municipal officials, an annual publi-

cation entitled *Ideas for a Better City* and other specialized publications designed to be of assistance to cities in a variety of areas.

County Technical Assistance Service

- Developed a new system for determining each county's adjusted tax effort. This local tax effort is the major factor of the formula used for calculating federal revenue-sharing funds due counties. The new system resulted in an increase of more than $16 million in the adjusted tax effort for 70 Tennessee counties. This brought in $5 million more in federal revenue-sharing funds for the counties during 1974-76 than would have been received under the old system.
- Visited each sheriff in Tennessee to become more knowledgeable about their needs and problems.
- Compiled and published the private acts of 42 Tennessee counties. This project was funded by a special appropriation from local funds and was designed to provide a service which was not being met by any other assistance group.
- Established guidelines for use by county highway departments in designating rural roads.
- Completed a survey of wages and salaries in adjacent counties for parallel job descriptions.

Since it is a new unit, CTAS is still working on determining the total array of services it will provide. The staff has undertaken a regular review, analysis and issuance of reports on legislation which has an impact on county governments. It also plans to keep county officials informed and to provide assistance to them in implementing provisions of various state and federal laws, which is a major activity for MTAS as well.

The service is also following the MTAS example by carrying out a vigorous publications program. It issues periodical CTAS Technical Reports on major issues affecting county governments and has prepared a comprehensive directory of Tennessee county officials.

Center for Industrial Services

The Center for Industrial Services has tried through the years to keep its emphasis attuned to the primary industrial concerns of the day. For example, current efforts are heavily oriented toward energy conservation, noise abatement and improved cash flow management and productivity. In-plant or on-site educational activities play a large part in meeting these needs.

A major thrust of the center has been providing assistance to smaller business and industry in the state. Statistics for the first nine months of the 1974-75 year showed that slightly more than a fourth of the program effort was directed at firms with fewer than 25 employees.

During the year the center received 970 requests for assistance and completed work on 652 projects. The staff of 11 is assisted extensively by faculty on all UT campuses as well as faculty of other colleges and universities throughout the state.

Willingness to Involve Others

One characteristic of all IPS operations is a willingness to involve other colleges and universities in the provision of necessary services. IPS always tries to use the closest capability to meet a need, Hutchison emphasized. This is especially true in providing service to industry. CIS has found that this is cheaper and that business people prefer to use a local institution.

Here are two specific examples of projects conducted during the 1974-75 year and the different approaches taken to solve them:

The president of a Tennessee company asked a CIS field engineer to design a system for the control of the firm's inventory and production. The engineer learned that the company had seven separate reports which had to be used to determine what was happening in the plant. He designed a new report format which could provide all necessary information on one form.

A company which was running into trouble in developing a machine for fusing backing to trouser fabric bands asked CIS for help. A faculty member conducted tests of several materials

which could be used as hot plates for the fusing process and made specific recommendations. These were adopted by the company for a resultant increase of 30 percent in the production efficiency of the banding operation. The use of similar banding machines in all plants of the national company is now under consideration.

Center for Government Training

The Center for Government Training is able to reach a phenomenal number of government officials with training programs as a result of a unique coordinated approach which exemplifies the IPS dedication to cooperation with other higher education institutions.

Through the Tennessee Local Government Training Delivery Network, coordinated by CGT, 30 educational institutions are involved in providing training programs for local government officials. This approach has given Tennessee the only network of educational institutions in the nation providing training on a coordinated and uniform basis.

In 1974-75, CGT provided training opportunities for employees of 26 state departments, 95 counties and 326 cities, including officials from more than 20 other states. This was done through 730 programs involving 18,632 participants.

Here are some specific examples of programs:

The center worked with UT and East Tennessee State University in the cooperative development, packaging and delivery of a finance program for local government officials. The program is now available for use throughout the state.

Under contract with the State Department of Labor, CGT coordinated the establishment of 17 Occupational Safety and Health Libraries throughout the state and the development of a 25-hour multi-media introductory course on the Tennessee Occupational Safety and Health Act for government, business and industry in Tennessee.

In cooperation with CTAS and the Office of the Comptroller of the Treasury, the Center offered a training seminar for 340 county officials. Workshop participants included county judges, county highway officials, registrars, judicial clerks, county court clerks and trustees.

An Unequalled Approach

The coordinated approach taken by the University of Tennessee is really unequalled by any other university. While a few other state and land-grant universities are spending roughly the equivalent amount of money for a wide range of government public service activities, none have coordinated

Residents of an urban renewal area in Murfreesboro, Tenn. enjoy a giant slide, focal point of their new playground, which was constructed with assistance from University of Tennessee personnel for less than $500.

their efforts under the umbrella to the extent achieved by IPS.

Yet it would be inaccurate to leave the impression that IPS has no problems. The last two years have been difficult because of funding problems. The institute is operating in 1976-77 with approximately the same amount of funding from state and local appropriations as two years ago.

Cutbacks in 1976

The shortage of new money at a time of sharp price inflation has necessitated some cutbacks including the elimination of seven professional and seven support staff positions outright and the loss of one and one-half more professional posts and one secretarial position with the transfer of the Title I program.

Three regional offices were closed, and, along with the other changes previously cited, certain public service activities at UT Chattanooga and UT Martin, which the institute had supported in the past, were eliminated.

At the same time, the need for IPS assistance is growing rather than declining. Speaking recently to the Public Service and Continuing Education Committee of the UT Board of Trustees, Dr. Charles E. Smith, UT Vice President for Public Service, noted that responses to requests for services were up in 1975-76 for almost all IPS agencies. Yet even the higher statistics did not accurately reflect the growing demand for help.

"In almost every agency, we are finding requests for help which involve more complex problems and consequently, more time," he added.

The IPS funding problem has been intensified, Director Hutchison readily admits, because past expansion was made in some cases with support from a special grant that cannot now be picked up by the state.

No Change in Attitude

"In defense of the state legislature, I believe there is no intent to cut back. The dollars simply haven't been there," Hutchison said. "I have noticed no change in their attitude about our services."

For IPS there are now some difficult questions to be answered as to its future course.

"We aren't sure where the limit to expansion is," Hutchison said. IPS is exploring the possibility of new funding arrangements. Two projects are under way which involve the federal government in the establishment of some new linkages to help business, industry and governmental units.

In addition, IPS is exploring, under the leadership of the Tennessee Higher Education Commission, opportunities to broaden its cooperation with other public higher educational institutions in the state to maximize the resources of all universities and colleges in meeting state needs. Support from non-governmental sources is a third possible direction for expansion.

Despite its very real problems, IPS views the future with optimism. This optimism was summed up by Vice President Smith in his closing remarks to the UT Trustees public service committee:

"In the long term, we believe public service will assume a more valued role in higher education. Within our available resources and with the support of you and others, we expect to continue providing meaningful and essential services for the governments and businesses of Tennessee."

II. A Pennsylvania Experiment

In 1964, another pioneering activity was started by Pennsylvania State University. The Pennsylvania Technical Assistance Program (PENNTAP) was established at the height of national emphasis on the space program because, according to director Roy Marlow, many people in the state thought that "If we can send a man to the moon, why can't we solve a pot-hole problem in Pennsylvania."

The program was designed to see if existing information could be transferred to users in a manner that would produce benefits for the state. More than a decade later, PENNTAP has proved unequivocally that it can be. During the 1975-76 academic year, the service responded to 1,734 technical inquiries which resulted in a savings of $2.4 million.

"That isn't a bad return for $150,000 in state tax money," Marlow observed. As it is set up, the program offers one of the best examples in the country of cooperation between a university and state government in a technology transfer program.

In fact, an evaluation conducted by a team of educational administrators in 1975, at the completion of its first decade of service, called PENNTAP "a program that other states should emulate."

PENNTAP operates as a continuing education function of Penn State. In addition to its state support, which

is channeled through the Department of Commerce, it also receives operating funds from the university and from various other agencies. In 1975-76, the program received $150,000 in state funds and $250,000 from the other sources. Much but not all university assistance is in the form of supporting services such as the use of facilities and university personnel rather than actual money.

Although PENNTAP was originally set up strictly to serve industry, for the past ten years it has also served a wide spectrum of public agencies from the state legislature to local school districts. Last year 700 of its 1,700 inquiries were from the public sector.

Penn State, with 21 branch campuses and 24 continuing education offices scattered across the state, is well set up to offer technical services quickly on a person-to-person basis. Eight full-time PENNTAP technical specialists work from these locations to respond to inquiries. These specialists are well versed concerning resources available within the state, whether on the Penn State campus, on another campus, or within a state lab. They may even go outside the state or the country to find the information that is needed.

"The agents serve as an interface rather than as walking encyclopedias," Marlow explained. "Often, however, we have to translate and interpret the information we find."

"Just because information is available it can't be assumed that it can be used," he continued. "In responding to questions, we work on a face-to-face, one-to-one basis to make sure that we understand the problem, and those being helped, in turn, understand the information we are giving them."

Match-making Role

PENNTAP has consistently refrained from setting up any type of research service of its own. When a request cannot be answered with existing information, the specialists make sure that the need becomes known to the best agency in the state for doing the work—whether this is a research unit or academic department at Penn State or another university or a state research lab.

"We are match-makers," Marlow explained. "We hold the hands of the requesting group and make sure the information gets to the right source."

Existing information often can help in surprising ways. When fire destroyed the Taylor (Pa.) Municipal Building, officials assumed that 64 years of government records had been lost with it. PENNTAP was able to prove them wrong. Technical librarian Anthony Venett had learned about possible reclamation procedures following experience he gained after tropical storm Agnes in 1972.

He quickly advised Taylor authorities to remove the files from the basement of the burned building and to procure a photocopying machine and to make copies of wet, soiled or partially destroyed documents. As they worked they were told to keep the wet files from drying out by placing them in air-tight plastic bags. Any files which were going to be kept for a long time before copying should be frozen to prevent mildew and rot from setting in. Once the records dried out they would have become too fragile to handle.

Under Venett's direction approximately 90 percent of the damaged documents were reclaimed.

Improving Safety

Another practical solution to a state problem which came from PENNTAP is playing a major role in improving truck safety in the state. Most trucks traveling east-west and north-south routes travel through Pennsylvania and must cross its mountains. Broad Mountain was a special hazard for them. Route 93 intersects Route 209 at the bottom of the mountain and traffic must stop at the intersection. Many loaded trucks coming down the mountain were unable to stop and careened out onto 209.

Miraculously, no fatalities had occurred at this intersection, but the danger was always present. The state wanted to build a truck run-off to alleviate the problem but found that existing designs did not exactly fit the situation. The Pennsylvania

Technical assistance from PENNTAP resulted in the recovery of 90 percent of the city's records when the Taylor (Pa.) Municipal Building was destroyed by fire.

Department of Transportation contacted PENNTAP for information on new truck run-off designs. A staff member located a research paper written by three engineers at the Road Research Laboratory of the Ministry of Transport, Crowthorne, Berkshire, England which provided the answer to the state's problem.

The paper discussed the use of pea-size gravel and aggregate as an arrester bed for vehicles on long downhill roadways. PENNTAP also located an article which described arrester beds of this type being built in California.

Such arrester beds slow down vehicles in less time and distance than most conventional gravity run-offs and require no slopes to be effective. The design, land acquisition and construction costs are also cheaper. Instead of costing taxpayers $233,000, the estimate for construction costs for a conventional run-off, the run-off was built for $144,000, a savings of $89,000.

Total savings will be far greater because the design, with its advantages, can solve similar dangerous situations in other locations throughout the state.

As mentioned earlier, PENNTAP always strives to provide quick service. Occasionally it provides instant service. Such was the case when construction on a new school was stopped at ten o'clock one morning because neither the contractor nor the architect knew whether or not a vapor barrier should be installed. While workers sat waiting, the local superintendent of schools called PENNTAP for help. By ten forty-five a specialist had provided the necessary information and the workers were installing the vapor barrier.

Coping with New Legislation

As with the University of Tennessee, PENNTAP has found that one of the major roles it can play is that of educating government officials and other citizens concerning the complex requirements of new legislation. In Pennsylvania, the Clean Streams Act of 1970 is an example of legislation needing some interpretation. One of the nation's strongest water pollution control laws, it is intended "not only to prevent future pollution but to reclaim and restore to clean unpolluted condition" all the waters of the Commonwealth. The law prohibits the discharging of any waste material without a permit. Waste material must meet certain specifications to qualify for a permit.

The Pennsylvania Department of Environmental Resources (DER) is empowered by the law to require a municipality to "acquire, construct, repair, alter, complete, extend, or operate a sewer system or treatment facility to prevent water pollution or public nuisance."

For many small communities in the state this requirement posed a major problem. In many cases, these com-

A PENNTAP effort designed to improve truck safety in Pennsylvania is helping to reduce the number of scenes like the one below.

munities either did not have a sewer system or water treatment facility or needed to update the system they had. The dilemma these communities faced in complying with the new legislation is a prime example of the kind of problems smaller cities and towns often must deal with in attempting to comply with sophisticated technological requirements.

PENNTAP decided to initiate a program to help. Utilizing the Continuing Education Division of Broadcasting, a film depicting a community's experience in constructing a sewage treatment facility was made.

The film, designed to be an introduction for citizens, community groups and local and municipal governments, explored typical requirements, problems and opposition to a treatment system which a community might experience.

A book, *Clean Streams and You: A Pennsylvania Manager's Guide to Water Pollution and the Law*, was written under the auspices of PENNTAP with the cooperation of DER. The book is designed for the layman and is a "how-to, where-to" guide to the law and its requirements.

Broad public dissemination of both the book and the film have helped improve understanding of the implication of this new law and how it can best be implemented.

An Active Mode

These efforts to help the public understand a complex but vital new state law illustrate a new thrust of the PENNTAP enterprise. In addition to responding to requests for information, PENNTAP is now making a major effort to serve the state in what director Marlow refers to as "an active mode."

This means simply that in addition to waiting for requests to come in, PENNTAP specialists are also trying to inform groups who might benefit from the existence of certain new information even though there might not have been a specific request for assistance.

"We are trying hard to work more in this area for this has the greatest potential," Marlow said.

PENNTAP has developed a seven-step "active mode" process for seeking out new technology which can be applied to prevent problems from occurring. The steps are:

1. Through its involvement with many federal research and development organizations which develop new technology, PENNTAP is constantly on the lookout for information which can be applied in the public sector.

2. Contact is made with potentially interested persons who may be able to utilize this material.

3. The new technology, its developers and the potential user are brought together. On-site observation of the system is employed and relevant

material and pertinent literature are explored.

4. Pilot programs using the new technology are developed in cooperation with the potential users if they feel they can benefit from its application.

5. After the pilot program period, PENNTAP conducts seminars in order to transfer the technology to other similar groups which may benefit.

6. PENNTAP follows up with seminar participants on an individual basis.

7. Evaluation of transfers is made to determine user benefits.

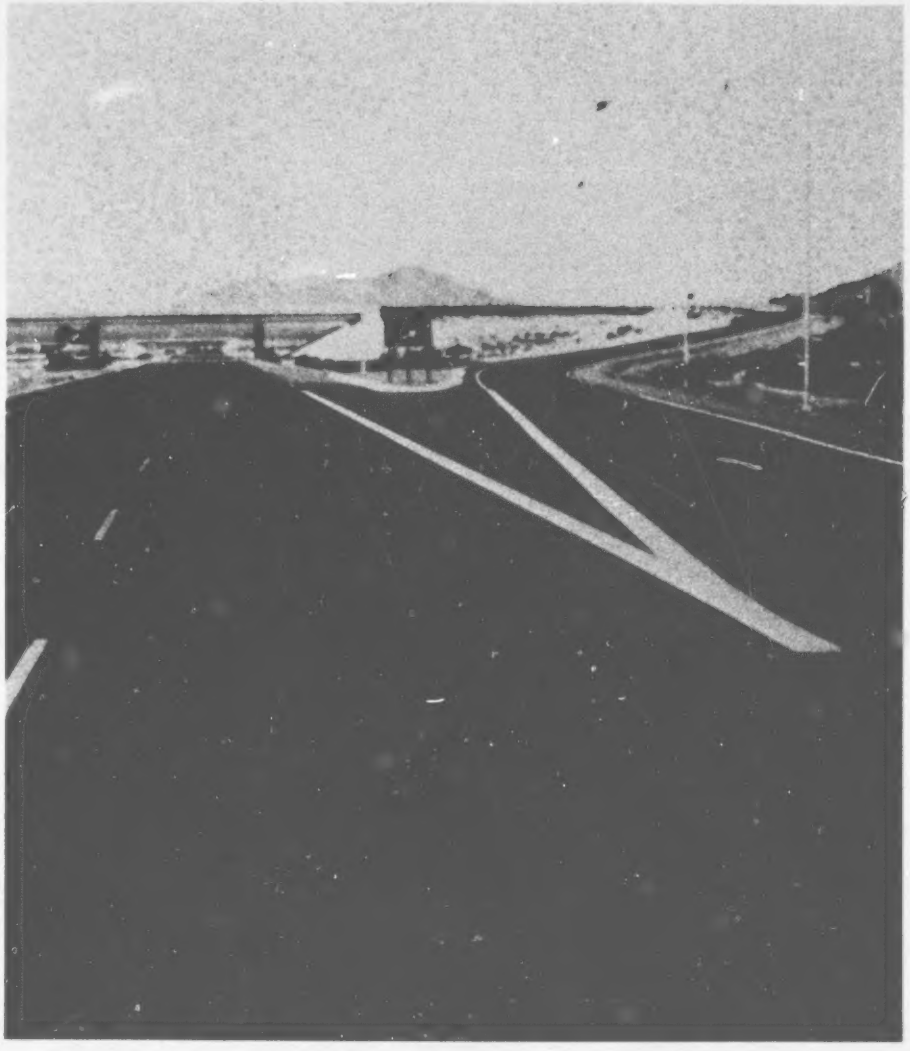
People Involvement

PENNTAP specialists receive much guidance from a very active advisory council which helps in the establishment of yearly priorities and in evaluating past performance. Council members also serve to heighten awareness of PENNTAP throughout the state.

It is this involvement of a large number of people which in the end accounts for the difference between success and failure, Marlow firmly believes.

"No matter what effective mechanisms and data bases are developed, ultimately it is the human element which insures the use of such data," he said. "It is the people involved with PENNTAP who help create awareness, who can provide assistance, who can translate results and who can prevent the duplication of effort."

Pennsylvania State University research has come up with a way to keep motorists out of highway exit gores (space inside the V), where many accidents happen, with the use of glowing pavement markings.



CHAPTER FOUR

A Natural Partnership

A desire to provide a maximum amount of actual experience for students of public policy has led several state and land-grant universities into strong service programs with inevitable benefits to state and local government units within the areas they serve.

Five survey respondents reported that technical services were provided through a school or college as an adjunct to student education. These institutions and the colleges involved were:

University of Delaware—College of Urban Affairs and Public Policy

University of Minnesota—School of Public Affairs

Ohio State University—School of Public Administration

Pennsylvania State University—Institute of Public Administration*

University of Texas—Lyndon B. Johnson School of Public Affairs

A Growing Area

These schools, of course, do not represent the only schools of public policy at state and land-grant universities. In fact, enrollment in graduate programs designed to prepare students for government service is one of the most rapidly growing areas in higher education today. From 1972 to 1974 enrollment in such programs rose 65 percent. During the same period the number of master's degrees awarded by graduate schools of public administration, public policy and public affairs increased 62 percent.

The data reported by the National Association of Schools of Public Affairs and Administration showed that enrollment jumped from 12,600 to 20,080 in the two-year period. There were 3,700 master's degrees in public administration awarded in 1974-75.

The programs listed above are unique because of their strong emphasis on learning through service.

The advantage of combining actual service to government with coursework for students who are preparing for careers in public administration was summed up by Clinton B. Oster, dean of the Ohio State University School of Public Service.

"Our service function adds a real life factor to faculty research and student learning," he observed. There are more than 200 graduate students enrolled in the Ohio State program. Most service activities concern city government operations in Columbus, home of the university, and are conducted in close collaboration with city officials. Three typical projects which involved students were:

- A study of ways to use solid wastes to generate electricity.
- A task force analysis concerning the question of pricing the city water to provide additional funds to increase water supply and sewer capacity.
- Assisting neighborhood groups in efforts to improve citizen participation in local government.

LBJ School

The LBJ School of the University of Texas offers a good example of the type of impact that can be made by combining student education and service. The school, which only admitted its first students in September, 1970, is engaged in a comprehensive research and service program with student education at its center.

"There have been five or ten new programs in the Seventies. They all share an increased emphasis on quantitative skills, but we have gone the furthest," observed Acting Dean Jurgen Schmandt. "It's a very worthwhile enterprise. We will establish a track record by which we can be measured later."

Although the original academic planning committee for the school had envisioned a more traditional program, the design and direction for the new school was completely revamped and rethought by the first dean, John Gronouski, who is still a member of the school's faculty. Former post-

*Functions as an institute of government and as an academic department of the College of Liberal Arts.

master general and ambassador to Poland during the Johnson administration, prior to which he had served as tax commissioner for the state of Wisconsin, Dr. Gronouski brought enormous experience in public life to his challenging new assignment.

Three Basic Propositions

Under his leadership it was determined that the school's program would be guided by three basic propositions:

It would be broadly interdisciplinary, drawing upon every field of study pursued in a university setting—the physical, social and life sciences, the arts and the professions.

Its central focus would be interdisciplinary research on concrete policy problems selected in response to a strong user interest on the part of the government agencies involved.

In all aspects of the school's program, but particularly in its practical policy research activities, there would be continuous interaction between the students and faculty of the school and administrators, legislators and other actors in the policy process.

The school has remained faithful to these underlying precepts. The current 19 full-time faculty members have 54 areas of specialization, as listed in one of the school's brochures, along with substantial experience in public service. These areas are broadened even more through visiting faculty and the use of faculty from other parts of the university.

Summer Internships

Each of the 130 students who are currently enrolled in the school's two-year Masters of Public Affairs program is required to complete a summer internship with a public agency as well as spending approximately a third of his or her time in each of the two years on a policy research project.

These projects offer a unique vehicle for effectively bringing together teaching, research and public service in efforts to solve troublesome public issues. Approximately ten projects are carried out in this manner each year. Projects have dealt with various aspects of such diverse areas as: Water resource development and management, land resource management, child development, welfare administration, property tax administration, energy policy, postsecondary education, social service delivery systems, special revenue sharing, state insurance policy, health maintenance and poverty.

Each project is carried out by a team of 15 first- and second-year students and three faculty members—each drawn from a different discipline—working with a governmental agency. Its output is an analytic report to that agency on the selected problem.

User Interest

Project ideas may come directly from the faculty or may be instigated by the agency which is most intimately concerned with the problem. However the idea originates, a strong interest in the project on the part of the potential user is vital. This client orientation makes it possible for the students to interact continuously with people involved in the policy process—activity which will often give them a far different view of the role research plays in this process than they would have otherwise.

As a brochure from the school explains, "When conducting research in a policy environment, the student comes to appreciate that persuasive research findings are not likely to effect policy change if those findings are brought to bear on the political process without political realities having been taken into account."

"It's a tough business," observed Acting Dean Schmandt, who is also a member of the school's faculty. "But I wouldn't want to be in a university setting unless I had such an opportunity to combine teaching with actual involvement."

The interdisciplinary research projects are becoming increasingly well known among potential beneficiaries. Reactions to the projects have ranged, according to Schmandt, from "complete agreement and declaration of love to opposition."

Becoming Known

Because of its educational function, the school's work has a better than average chance of becoming known in the right circles. About 30 percent of the school's graduates go to work in state government and can spread the word to their co-workers. For example, Dean Schmandt noted that three of the 12 staff members in the office of the Speaker of the Texas House of Representatives are LBJ School graduates. Summer internships have also led to the development of research projects as students have spread the word about the school's approach.

In 1976, 57 students were involved in summer internships. Twenty of the students worked in Washington, D.C. and 25 worked in state and local agencies in Austin. Others were scattered in positions in Wisconsin, New Jersey, California and Colorado. One student worked in Paris, France, in the Center for Educational Research and Innovation in the Organization for Economic Cooperation and Development.

Opportunities for Interaction

Increased interaction with government is helped along by some other aspects of the school's operations as well.

The Office of Conferences and Training brings hundreds of government employees and others with an interest in public policy into contact with the school each year through a variety of short-term institutes, seminars and conferences. In 1975-76, there were 1,400 participants in these programs.

Four of the offerings have become annual events. They are the Governmental Accounting and Finance Institute, the County Auditors' Institute, the Institute for Tax Assessors and the City Management Institute. The office conducts a biennial pre-session conference for the Texas legislature.

The school also sponsors a joint conferences program dealing with major public issues in conjunction with the Lyndon Baines Johnson Presidential Library, which is adjacent to the school.

Boost from Ford

Support from the Ford Foundation has played an important role in the development of the school's education and research programs in areas where regular funding was not always available. A recent $100,000 grant brought the total amount from Ford to $545,000. The new funds, to be expended from 1977-79, will be used to expand the school's program in four areas:

To enhance the public policy core curriculum.

To develop new policy research areas.

To convert policy research findings into major publications by the faculty.

To expand general program scope in such areas as minority student recruitment, the range of summer internships, the amount of assistance available for student independent research projects and extension of the visitors' program to give students more time to meet with experienced public officials on a one-to-one basis.

A New Approach in Delaware

The Ford Foundation also played a vital role in the development of the College of Urban Affairs and Public Policy of the University of Delaware. The college evolved out of the Division of Urban Affairs, which was founded in 1961 with $500,000 in seed money from Ford.

The original emphasis was on helping to solve the monumental problems facing urban communities. Unlike many other university units which started with such lofty goals and foundered as the academic community realized that it had taken on a load which it was not prepared to carry, the Delaware effort has flourished.

Dean Howell Brown attributes the success of the Delaware effort primarily to the type of initial response that the university made to the challenge of finding ways to use their resources more effectively in the community.

"We put the funds into the establishment of a separate new unit. The professional development of faculty members involved in the effort was

dependent on how well they worked in that area," he explained.

"Others put their support into existing units, consumed the resources but continued to operate in the same fashion they had before," he added.

"People who work in public service-oriented programs like ours must have personal value orientations that are different from what they have been in the traditional disciplines," he pointed out.

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Learning by Experience

Dr. Brown admits that he has learned much by experience both about how to make a university-based service program work and about how to prepare students for public service careers. A sociologist and demographer, he relates how his work in developing the Delaware program has completely changed his way of teaching research design.

"I found that I had been lying to my students when I told them how to do research. I discovered that all I had really been interested in was just getting enough information so that I could come back and write a research paper.

"Now I know that if a service program is going to work you have to make sure that you come back with your findings to the people who can use them," he explained. "A fundamental issue like trust becomes extremely important."

If the citizens and public officials with whom you must work don't trust you, the program will not succeed, Dr. Brown stresses. And he has found that developing trust takes a long time.

Developing Trust

During its 15 years of operation, the Delaware program has apparently been able to build this type of trust. The original urban orientation has now been expanded to include service to a variety of state agencies, including the governor's office and the state legislature.

The student education aspect of the program has also expanded along with its service orientation. Recognition of this fact came in May, 1976 when the division was changed officially to a college. Both a master's and a doctorate degree are offered in Urban Affairs, and in fall, 1976 the college began a master's degree program in Public Administration. There are 90 students currently working toward one of the three degrees.

"We have integrated research and service into the educational activities," Dr. Brown noted. "Students are high-level cheap labor."

Some Statistics

A few statistics for the 1975-76 year give some idea of the extent of the research and service activities:

Staff members and students were involved in over 53 separately funded research projects.

Sixteen formal reports on research conducted in local communities and for Delaware state agencies were published.

The staff published 50 books, articles and monographs and presented numerous papers at professional meetings.

Yet public service activities cannot be entirely explained in neat statistics. Much assistance provided by the college does not take the form of a written report but is transmitted through meetings and person-to-person consultations.

The college focuses its public service activities in four major areas:

Urban Agents Program

General Technical Assistance

Census and Data Systems Programs

Public Management Programs

Urban Agents Program

The most unique of these activities is the urban agents program which provides research and other technical skills to community groups and agencies in the Wilmington area, with special attention to those groups which would not ordinarily have access to the services of the university.

The general approach of the four urban agents is to work with urban groups to help them reorganize in a manner

Ohio State University students talk with officials at flood site

which will enable them to meet their own needs more effectively in the future.

The college's work with the Wilmington Home-School-Community Council illustrates how this interaction works. An urban agent serves as the principal staff consultant to the council and its affiliate Parent Educational Resource Center. The agent initially worked with the council to revamp the organization's structure to include broader representation of schools and parents and to establish working committees in policy areas such as school finance, school personnel and school curriculum. Training and educational programs were also conducted for officers of the council.

Getting Results

As a result, in fall, 1975 the council was able to assume a major role in organizing parents of children in the Wilmington public school system to influence the Wilmington Board of Education and the Wilmington Federation of Teachers to resume negotiations toward termination of a teachers' strike.

Work with the Parent Educational Resource Center has included helping in the development of a monthly newsletter to be circulated to all Wilmington school parents and the preparation of a comprehensive community organization manual for use by school association officers.

The urban agents program has also been actively involved in a series of educational activities aimed at preparing Wilmington area citizens to accept and implement a possible forthcoming school desegregation decision. These activities have been carried out in cooperation with the Delaware Committee on the School Decision, a 50-member committee appointed by the Governor, county executive and mayor of Wilmington and with the Parent Educational Resource Center.

Activities in this area have included:

The preparation of *UPDATE*, a resources handbook listing desegregation related activities, films, written material, consultants, organized services and legal background material, which was distributed to over 300 educational leaders.

Organization of a small group discussion coffee program, which has brought university scholars in contact with concerned members of the general public. More than 50 coffees have been held, reaching well over a thousand people.

Three citywide workshop-public meetings and one all-day leadership conference on school desegregation.

Teaching About Credit

Work with the four Wilmington credit unions has constituted another major activity for urban agents. A comprehensive historical and fiscal study of the credit unions was completed in 1975 through a grant from Community Action of Greater Wilmington, Inc. (CAGW). The staff has also provided CAGW with a series of recommendations for future funding procedures and priorities for budget allocations to the credit unions while providing credit union officials with a series of recommendations to help them upgrade their general fiscal and administrative capabilities.

In efforts to help the credit unions improve their operations a special technical assistance and consultation program has been developed through subcontracts with personnel at the university's College of Business and Economics.

The urban agents staff has also become involved in promotional activities to help obtain increased deposit accounts for the credit unions—efforts which brought in more than $60,000 in 1975-76.

Students have been brought into the urban agents program through the development of several student internship work projects. During the summer of 1976 students were involved in a Minority Group Entrepreneurship Study, a Federal Credit Union Planning and Organizational Assistance Project and a Needs Assessment and Opinion Study of the North East Neighborhood. All master's degree candidates are required to complete an internship.

The combination of student education with public service will undoubtedly continue to grow both because of the interest of students and educators in obtaining first-hand experience and the very real need of the public for the types of services which the educational community can provide.

CHAPTER FIVE

Organized Research Units: A Vital Link to Government

The array of subject matter under study at state and land-grant universities with at least some policy relevance is amazingly large. Yet the areas where lawmakers and governmental administrators have perceived the greatest need for more information are those with high scientific content.

Among the issues involving major considerations of science and technology are such vital national topics as energy, productivity, the environment and resources.

Mobilizing science and technology resources to more effectively meet their needs has been a concern of both state and local governments for several years, and in many cases technical services units of state universities have been able to play a significant role in improving the flow of information.

Such units nevertheless represent only one type of contact point for government within the university. Often the role of technology transfer is carried out through organized research units.

Research Institutes Multiply

Research institutes have become increasingly numerous on university campuses within the last decade. They have been set up primarily to deal with topics of study which are interdisciplinary in nature, such as energy, the environment, urban problems and transportation. The units provide an organizational structure for channeling and focusing research support from a variety of sources to deal with the many facets of such complex issues.

Because of the great concentration of expertise within research units, state and local governments often turn to them for assistance in solving technical problems.

As mentioned earlier, the NASULGC survey asked for specific information on research and technical services activity related to certain specific areas of concern with high scientific and technical content.
The areas were:

Energy policy

Transportation

Land use planning; land reclamation; comprehensive zoning

Power plant siting

Coastal zone management

Building and housing codes

Health care systems

Air/water quality

Noise regulation

Radioactive waste disposal; radiation protection

Two types of information were requested from survey respondents concerning their work in these areas. Respondents were asked to provide information on funded projects being carried out through their formal technical services units, and they were asked to provide detailed information on the types of activities carried out by research institutes which conducted study in the specified areas.

Funded Projects

Only 22 institutions responded to the portion of the questionnaire on funded project activity within their technical services units. Information concerning such activity seemed to be difficult to pinpoint and responses undoubtedly fall far short of showing the amount of activity being carried out by these units.

Altogether, the 22 universities responding to this portion of the questionnaire listed 112 funded projects. In addition, two universities said that they had done work in some of these areas in the past but now have no funded work.

Some projects were reported for each of the specified areas, and no one category seemed to predominate as the topic most likely to be studied. The largest number of projects (17) dealt with land use planning and land reclamation. There were ten or more projects reported for six other areas, and the smallest number of projects reported was five, the number listed for the categories of power plant siting and radioactive waste disposal and radiation protection.

Respondents were asked to provide information on the amount of funding per project, but response to this question was so poor that no meaningful picture of the amount of funding was possible.

More Than One Source

Information sources of funding did show that most projects were funded from more than one source and that the sources were most likely to be state or federal funds. Sixty of the projects cited were funded entirely or partially from state funds, and 56 were funded in whole or in part with federal funds.

Other sources of funding, cited much less frequently, included: University, 16 projects; private sources, 16 projects and local government, 11 projects. No information on the source of funding was provided for 21 projects.

(The chart on the following page provides information on the number of funded projects reported in each area and the sources of funding.)

More Prevalent

Study in the special areas was more likely to be conducted by research institutes, survey responses indicated. Of the 71 campuses responding to the survey, 54 reported that they had

organized research units conducting research in one or more of these areas. Among this group were 25 universities which did not have special technical services units.

The 54 universities reported a staggering total of 208 institutes dealing with one or more of the 10 topics. Four topics were the most prevalent subjects of study, with 50 institutes or more cited in each of these areas. The largest number of institutes (66) was reported in the area of air/water quality. This would be partially attributable to the fact that the federal government has provided funds for the establishment of institutes dealing with water resources at a land-grant institution in each of the 50 states.

The other three areas for which an especially large number of institutes were reported included: Land use planning, land reclamation and comprehensive zoning, 64; energy policy, 61 and transportation, 50.

There were more than 20 institutes reported for each of the specified categories, and in every case the number of reported institutes was larger than the number of universities, indicating the existence of multiple institutes dealing with the specified areas of concern on many campuses.

Institutes Per Campus

Tabulation of the number of institutes reported per campus showed that the University of Texas, Austin, had by far the largest number of research institutes dealing with the specified topics. That campus reported a total of 26. The second largest number of institutes (14) was reported by the University of Alabama, University. Four other universities had 10 or

Funded Activity of Technical Services Units in Scientific/Technical Areas

Area of Activity	Number of Funded Projects	Sources of Funds*				
		State Governments	Federal Governments	Local	Private	University
Land-Use Planning, Land Reclamation	17	9	11	1	2	2
Transportation	14	9	7	1	1	1
Health Care Systems	13	5	7	2	1	2
Energy Policy	12	8	6		2	1
Air/Water Quality	11	4	5	2	1	1
Building and Housing Codes	11	6	6	2	1	2
Comprehensive Zoning	10	6	3	2	1	2
Noise Regulation	8	2	1	1	2	2
Coastal Zone Management	6	4	4		2	1
Power Plant Siting	5	4	3		2	1
Radioactive Waste Disposal, Radiation Protection	5	3	3		1	1
TOTALS	112	60	56	11	16	16

*In many instances, two or three sources of funding were reported.

Energy Policy	Transportation	Land Use Planning, Land Reclamation, Comprehensive Zoning	Power Plant Siting	Coastal Zone Management
Univ. of Alabama	Univ. of Alabama	Univ. of Alabama	Univ. of Alabama	Univ. of Alabama
Arizona St. Univ.	Arizona St. Univ.	Univ. of Arizona	Arizona St. Univ.	Univ. of California
Univ. of Arizona	Univ. of Arizona	Univ. of California	Univ. of Delaware	Univ. of Connecticut
Univ. of California	Univ. of California	Univ. of Colorado	Univ. of Florida	Florida St. Univ.
Univ. of Colorado	Univ. of Colorado	Univ. of Connecticut	Univ. of Maryland	Univ. of Florida
Univ. of Delaware	Univ. of Connecticut	Univ. of Delaware	Univ. of Mass., Amherst	Univ. of Maryland
Univ. of Florida	Florida St. Univ.	Univ. of Florida	Michigan St. Univ.	Univ. of Mass., Amherst
Univ. of Idaho	Univ. of Florida	Univ. of Illinois	Univ. of Michigan	Univ. of Michigan
Univ. of Illinois	Univ. of Illinois	Iowa State Univ.	Wayne St. Univ.	Univ. of Minnesota
Iowa St. University	Iowa St. University	Univ. of Iowa	Univ. of Minnesota	City College, CUNY
Univ. of Kansas	Univ. of Iowa	Univ. of Kansas	Univ. of North Dakota	North Carolina St. Univ.
Univ. of Kentucky	Univ. of Kansas	Univ. of Kentucky	Kent St. Univ.	Ohio St. Univ.
Univ. of Maryland	Univ. of Maryland	Univ. of Maryland	Miami Univ. (Ohio)	Texas A & M Univ.
Michigan St. Univ.	Michigan St. Univ.	Univ. of Mass., Amherst	Ohio St. Univ.	Univ. of Texas, Austin
Univ. of Michigan	Univ. of Michigan	Michigan St. Univ.	Univ. of Oklahoma	Univ. of Wisconsin, Madison
Wayne St. Univ.	Wayne St. Univ.	Univ. of Michigan	Univ. of Texas, Austin	
Univ. of Minnesota	Univ. of Minnesota	Wayne St. Univ.	Univ. of Utah	
Univ. of New Mexico	North Dakota St. Univ.	Univ. of Minnesota	Virginia Polytechnic Institute	
City College, CUNY	Miami Univ. (Ohio)	North Carolina St. Univ.		
North Carolina St. Univ.	Ohio St. Univ.	North Dakota St. Univ.		
Miami Univ. (Ohio)	Univ. of Oklahoma	Univ. of North Dakota		
Ohio St. Univ.	Pennsylvania St. Univ.	Kent State Univ.		
Univ. of Oklahoma	Univ. of Tennessee, Knoxville	Miami Univ. (Ohio)		
Pennsylvania St. Univ.	Texas A & M Univ.	Univ. of Oklahoma		
Univ. of South Dakota	Univ. of Texas, Austin	Pennsylvania St. Univ.		
Univ. of Tennessee, Knoxville	Univ. of Virginia	Univ. of South Dakota		
Texas A & M Univ.	Virginia Polytechnic Institute	Univ. of Tennessee, Knoxville		
Texas Tech Univ.		Texas A & M Univ.		
Univ. of Texas, Austin		Univ. of Texas, Austin		
Univ. of Utah		Univ. of Utah		
Virginia Polytechnic Institute		Univ. of Virginia		
Univ. of Washington		Virginia Polytechnic Institute		
Univ. of Wisconsin, Madison				

Building and Housing Codes	Radioactive Waste Disposal, Radiation Protection	Health Care Systems	Air/Water Quality Programs	Noise Regulation
Univ. of Alabama	Univ. of Alabama	Univ. of Alabama	Auburn Univ.	Univ. of Alabama
Univ. of California	Arizona St. Univ.	Univ. of Arizona	Univ. of Alabama	Arizona St. Univ.
Univ. of Florida	Univ. of Arizona	Univ. of Florida	Arizona St. Univ.	Univ. of Florida
Univ. of Illinois	Univ. of California	Univ. of Illinois	Univ. of Arizona	Univ. of Illinois
Wayne St. Univ.	Univ. of Florida	Univ. of Kentucky	Univ. of California	Univ. of Iowa
Univ. of Oklahoma	Univ. of Iowa	Univ. of Maryland	Univ. of Colorado	Wayne St. Univ.
Univ. of Tennessee, Knoxville	Univ. of Kansas	Univ. of Mass., Amherst	Univ. of Connecticut	North Carolina St. Univ.
Texas A & M Univ.	Univ. of Maryland	Univ. of Michigan	Univ. of Delaware	Miami Univ. (Ohio)
Univ. of Texas, Austin	Michigan St. Univ.	Univ. of Minnesota	Univ. of Florida	Pennsylvania St. Univ.
Univ. of Virginia	Univ. of Michigan	Univ. of New Mexico	Georgia Institute of Technology	Univ. of Tennessee, Knoxville
Virginia Polytechnic Institute	Univ. of Minnesota	City College, CUNY	Univ. of Illinois	Univ. of Texas, Austin
Univ. of Wisconsin, Madison	Univ. of Nevada, Reno	Grad. Center, CUNY	Univ. of Iowa	Univ. of Utah
	North Dakota St. Univ.	Univ. of North Dakota	Univ. of Kansas	Univ. of Virginia
	Univ. of Pittsburgh	Univ. of Oklahoma	Univ. of Maryland	Virginia Polytechnic Institute
	Univ. of Texas, Austin	Temple University	Michigan St. Univ.	Univ. of Washington
	Univ. of Utah	Univ. of South Dakota	Univ. of Michigan	
	Univ. of Virginia	Texas Tech Univ.	Univ. of Minnesota	
	Univ. of Washington	Univ. of Texas, Austin	Univ. of New Hampshire	
		Univ. of Virginia	City College, CUNY	
			North Carolina St. Univ.	
			North Dakota St. Univ.	
			Univ. of North Dakota	
			Kent St. Univ.	
			Miami Univ. (Ohio)	
			Ohio St. Univ.	
			Univ. of Oklahoma	
			Pennsylvania St. Univ.	
			South Dakota State Univ.	
			Univ. of South Dakota	
			Univ. of Tennessee, Knoxville	
			Texas A & M Univ.	
			Texas Tech Univ.	
			Univ. of Texas, Austin	
			Univ. of Utah	
			Virginia Polytechnic Institute	
			Univ. of Washington	
			Univ. of Wisconsin, Madison	

more institutes. They were:

University of California (6 campuses)	11*
University of Arizona	11
University of Oklahoma, Norman	10
University of Florida	10

(The chart on the preceding pages shows the universities listing research institutes in each of the public interest categories.)

*Based on review of university research directory rather than on survey response. The number of applicable institutes may be larger.

What Research Is Done

Survey findings indicated that interdisciplinary research institutes, at least within the special public interest categories designated on the questionnaire, are surprisingly active in providing technical services. Almost all of the universities reporting an institute or institutes within a given category indicated that they provided a reference service. Most institutes were also engaged in state contract research, and there was widespread representation from these institutes on advisory boards.

The areas where there seemed to be the least amount of activity were personnel assignments and seminars. Since seminars are quite often handled exclusively or for the most part by divisions of continuing education or by academic units, the small number of universities which indicated that their research units conducted seminars is certainly not indicative of the extent of overall university activity in this area.

(The chart on the following page shows the number of universities reporting institutes in each of the major public interest areas, the total number of institutes and the number of universities conducting each of the listed types of activities within these institutes. Information on types of activities are shown as a combined response for the university where multiple institutes existed.)

Not Well Publicized

University research has not been well publicized for the most part and is therefore often unknown to the general public and to policymakers. The University of Texas, Austin, for example, recently concluded that much of its extensive research was simply hidden from public view. In an attempt to bring this work into the spotlight, the university began publication of a quarterly magazine dealing exclusively with on-going research.

Entitled "Discovery," the beautifully illustrated, 36-page magazine drew immediate enthusiastic response from hundreds of recipients.

University of California Associate Vice President for University Relations, Leo Geier, reports that his university learned that even when there was widespread public disenchantment with the university during the Sixties, the one area of activity that still commanded a great deal of respect was research. For that reason, the UC Clipsheet, distributed weekly to the media as well as to many public officials, concentrates heavily on university research activity.

More Aggressive

Increasingly the role of the university in fostering research dissemination to policymakers is even more aggressive than simply publishing results in a laymen-oriented publication. Almost all of the organized research institutes within the UC System have a public service officer whose primary responsibility is getting research results to the people who should know about them.

Robert Morris, who is public service officer for the Lawrence Berkeley Laboratory, estimates that he spends about half of his time in Sacramento, "knocking on doors."

"You have to sell information to the legislature. They never have to go out and look for it," he observed.

Morris noted that a major problem for him has been getting information out in an easily understood and brief format.

"Lobbyists bring in concise information. But people in the university are not used to putting anything in one page," he said.

Yet the awareness of scholars of the need for the presentation of technical information in a more easily understood fashion is improving, Morris believes.

"Some people in the laboratory are now writing in a more popular vein on such things as energy," he said.

California Consortium

The Lawrence Berkeley Laboratory has joined with its counterparts in the state in the formation of the California Consortium of Federal Laboratories. The group has now visited several cities throughout the state making presentations to municipal officials who are involved in doing things in areas where the labs might possess expertise which could be of benefit.

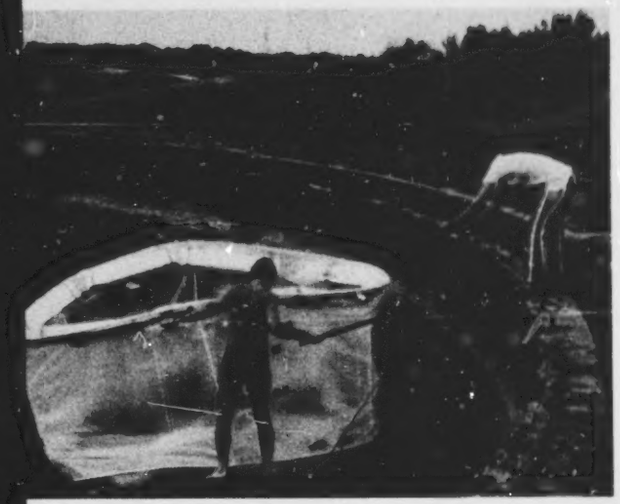
A representative from each of the labs makes a presentation of approximately 15 minutes during a morning session. In the afternoon participants divide into informal groups dealing with a variety of subjects. In these sessions, Morris explains, "they tell us what problems they've got, and we see what we can come up with."

The consortium hopes to put together similar sessions for county officials and for industry representatives.

Activities of Research Institutes in Scientific/Technical Areas

Type of Research	Number of Universities with Institutes	Number of Institutes	Federal Contract Research	State Contract Research	Reference Service	Seminars	Personnel Assignments	Advisory Boards
Energy Policy	33	61	20	27	30	18	13	26
Transportation	27	50	16	23	23	19	14	21
Land Use Planning, Land Reclamation, Comprehensive Zoning	32	[illegible]	26	26	30	22	14	22
Power Plant Siting	18	27	12	11	10	6	2	9
Coastal Zone Management	15	27	9	10	11	6	3	9
Building and Housing Codes	12	23	8	8	9	7	0	5
Radioactive Waste Disposal, Radiation Protection	18	26	7	5	13	8	4	11
Health Care Systems	19	38	13	13	15	18	9	11
Air/Water Quality	37	66	29	33	32	25	10	26
Noise Regulation	15	21	6	8	10	5	5	1

Water research projects underway at the Center for Research in Water Resources, University of Texas, Austin.



Easy Access Points

The growth of organized research units on university campuses has done much to improve the flow of research results from the campus to government. In fact many of these institutes were founded in recognition of the need for a better system of knowledge transfer as well as in an effort to coordinate interrelated research.

These special units provide easy access points for officials seeking information. Since most units have some support staff including, in many cases, special public service officers, the units are equipped to respond to queries without the necessity for the researcher to interrupt his own activity.

Research institutes also offer the greatest potential within the university for a channeling of research activity to serve public purposes. The Statewide Air Pollution Research Center on the University of California, Riverside campus offers an example of the impact which a research institute can make on public policy.

The center was founded on the campus in 1961 to bring together the impressive research already underway dealing with air pollution. The work at Riverside on air pollution dates back to 1949 when three university researchers, Dr. J. T. Middleton, Dr. Ellis Darley and Dr. O. C. Taylor along with Dr. A. J. Haagen-Smit of the California Institute of Technology, came out with a major study which showed that smog was an agent which could cause damage to plants. This was the genesis of a whole new area of study—environmental toxins.

University concern with air pollution continued to grow, led by the on-going research at Riverside. In 1956 the university sponsored an All-University Conference on Air Pollution which called for new basic and applied research to deal with air pollution.

Crisis Program

Finally in 1970 the university called for a "crisis" large-scale program to restore clean air to the state. The legislature responded by providing $9 million in state funds to the California Air Resources Board for a three-year Project Clean Air program.

As air pollution has become an increasing problem within the state and across the rest of the nation as well, the center at Riverside has concentrated on transmitting research results to policymakers as quickly as possible.

Center director Dr. James Pitts spends much of his time in Sacramento, meeting on an informal basis with legislators, agency officials and staff members. Requests for technical information come in daily. The center has conducted two sets of conferences for state officials, with Regents' Dissemination grants, and publishes a periodic semi-technical publication

dealing each time with one aspect of the center's research.

The work of this center in research dissemination, although perhaps exemplary, is certainly not singular, as survey results bear out. This type of activity would seem to represent the wave of the future for organized research units.

Combining Functions

In many cases organized research units are effectively combining the functions of research and the provision of technical services. The Environment Center of the University of Tennessee, Knoxville, offers an example of this approach.

The center has three stated goals:

Develop new information and insights from research.

Demonstrate the utility of selected research results.

Translate research and demonstration results and other technical information into forms that can be used by government, industry, students and other interested citizens.

Most recently the emphasis of the center has been on energy—how to provide it with less environmental damage and how to use it more efficiently to conserve supplies and save money while cutting down on production of pollution.

One project, a joint venture with the Tennessee Valley Authority and

Holifield (Oak Ridge) National Laboratory, involves the construction of two residences to test, evaluate and demonstrate solar utilization, as well as energy conservation, by using improved insulation.

The center is also working with the Center for Industrial Services of IPS in assisting small and medium-sized private industry in Tennessee to identify ways to save energy and money.

The center has become involved in communicating energy conservation ideas to consumers as well, partly supported by the Tennessee State-wide Consumer Education Program. The center has developed brochures, co-sponsored numerous conferences, briefings and workshops, including a briefing on energy for the General Assembly and a major citizens' workshop, and developed a Teacher's Guide on Energy Conservation.

Effective Merger

The Marine Sciences Center of Rutgers University offers another example of the effective combination of research and technical services. The center, which brings together scientists in departments ranging from Agricultural Chemistry to Zoology, operates a marine extension program. This program provides answers to inquiries, develops sources of literature, engages in troubleshooting and works to increase the state's awareness of its marine resources. It welcomes requests for speakers, films, publications, seminars, workshops and other educational activity off-campus.

Arm of Government

Research units on state university campuses at times are actually functioning as a research arm of state government. The Bureau of Economic Geology of the University of Texas, Austin, functions as the State Geological Survey and the bureau director serves as State Geologist. The Transportation Center of the University of Tennessee, Knoxville manages the Tennessee Department of Transportation research program.

Both of these centers also carry out a variety of other services of an advisory, technical or informational nature.

The Bureau of Economic Geology disseminates information about geological, mineral and land resources of the state primarily through the publication of reports and maps. Staff members also respond to daily requests for help and participate in research colloquia, workshops and public lectures and provide testimony for legislative hearings.

In 1974 the Bureau's Land Resources Laboratory monitored and took part in the efforts of several state agencies to formulate a remote sensing plan and to develop a conceptual design of a natural resources information

system. The staff of the laboratory frequently has responded to requests by committees of the Texas Legislature concerning legislation based on the results of the laboratory's programs.

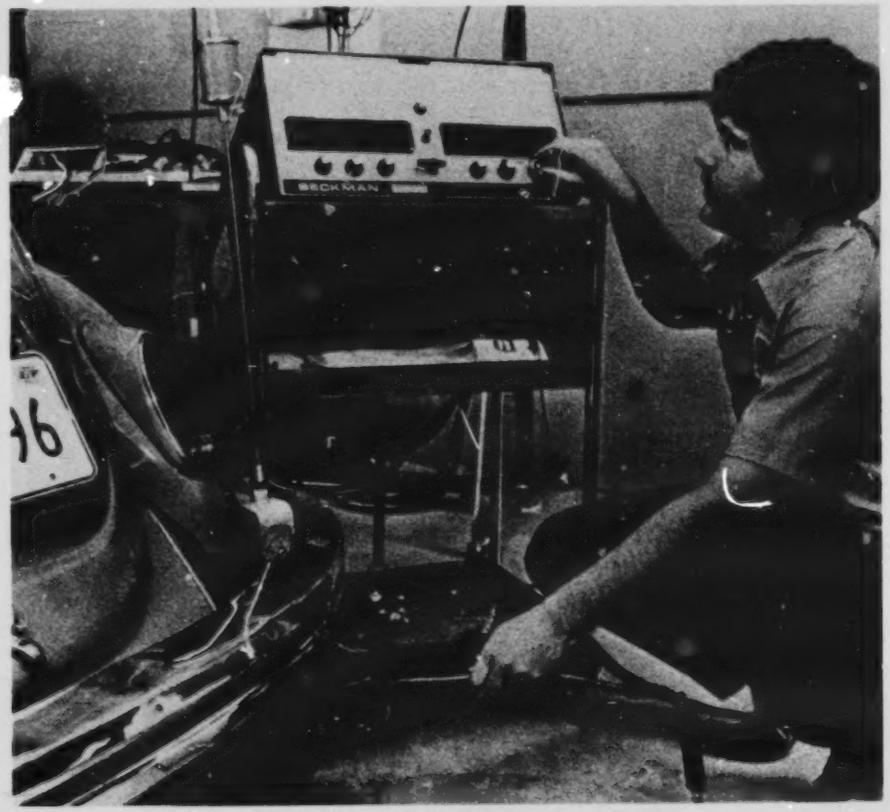
A major example of how the UT Transportation Center is able to coordinate research and service is Project Auto/SEE (Safety, Economy and Ecology) carried out by the center in Chattanooga. Funded primarily by the U.S. Department of Transportation, the project was one of five 16-month experiments designed to determine if diagnostic inspections of motor vehicles were cost-beneficial.

Fifteen thousand Chattanooga motorists participated in the project with half making up a control group and half forming a "diagnostic" group. The control group received routine inspections while the other group received more detailed examinations, both at six-month intervals. The diagnostic group were given written reports following each inspection which could be used to request specific repairs at service facilities. The center hopes to receive additional funding to continue the program through 1977.

Other grants from the Department of Transportation have been used to help Knoxville and Chattanooga in implementing car/bus pooling systems.

NASULGC survey results provide a very limited insight into the technical services activity of organized research units. The breadth of current activity could be a subject for another study. Certainly the potential for service is there and the motivation to provide this service seems very strong. Interdisciplinary research units dealing with issues of grave public concern will undoubtedly play a major role in improving knowledge transfer in the future.

A technician checks vehicle emissions during a routine inspection carried out as part of Project Auto/SEE (Safety, Economy and Ecology), a federally funded project being conducted by the University of Tennessee Transportation Center.



Organized Research Units at State and Land-Grant Universities in Scientific/Technical Areas

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
Auburn University	Water Resources Inst.	Air/Water Quality	•	•		•		
University of Alabama, University	Natural Resources Center	Energy Policy	•		•		•	•
		Land Use Planning	•	•	•			•
		Air/Water Quality	•	•	•			•
	Mineral Resources Institute	Energy Policy	•		•		•	•
		Land Use Planning	•	•	•			•
		Air/Water Quality	•	•	•			•
	Center for Business & Economic Research (Census Processing Center)	Transportation		•	•	•	•	•
		Building & Housing		•	•			•
		Land Use Planning	•	•	•			•
	Bureau of Engineering Research	Transportation		•	•	•	•	•
		Land Use Planning	•	•	•			•
		Power Plant Siting	•		•		•	•
		Building & Housing		•	•			•
		Air/Water Quality	•	•	•			•
		Noise Regulation			•			
	Transportation Research Group	Transportation		•	•	•	•	•
	Archaelogical Research	Land Use Planning	•	•	•			•
		Power Plant Siting	•		•		•	•
	Marine Science Institute	Coastal Zone Mng.	•	•	•		•	•
	Radiation Control—CD	Radioactive Waste	•		•			
	Center for the Study of Aging	Health Care Systems	•	•	•	•		•
	Comprehensive Day Care Center	Health Care Systems	•	•	•	•		•
	Psychological Clinic	Health Care Systems	•	•	•	•		•
	Speech & Hearing Center	Health Care Systems	•	•	•	•		•
	Develop. & Learning Disorders	Health Care Systems	•	•	•	•		•
	Center for Emotionally Disturbed Children	Health Care Systems	•	•	•	•		•

FC Federal Contracts
SC State Contracts
RS Research Service
S Seminars
PA Personnel Assignments
AB Advisory Boards

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
Arizona State University	Engineering Research Center	Energy Policy			•			•
		Transportation			•	•		•
		Power Plant Siting			•			
		Radioactive Waste			•	•	•	•
		Air/Water Quality			•	•		•
		Noise Regulation			•		•	•
University of Arizona	Division of Economic & Business Research	Energy Policy	•		•		•	
		Air/Water Quality	•	•	•	•	•	
	Medical Center	Health Care Systems	N/A					
	Rehabilitation Center	Health Care Systems	N/A					
	Bureau of Ethnic Research	Health Care Systems	N/A					
	Office of Institutional Studies	Transportation			•			•
	Arizona State Museum	Transportation			•			•
		Land Use Planning	•	•	•	•		
	Center for Remote Sensing	Land Use Planning	•	•	•	•		
	Agricultural Experiment Station	Air/Water Quality	•	•	•	•	•	
		Land Use Planning	•	•	•	•		
	Council for Environmental Studies	Land Use Planning	•	•	•	•		
		Air/Water Quality	•	•	•	•	•	
	Hazards Control	Radioactive Waste	N/A					
	Water Resources Center	Air/Water Quality	•	•	•	•	•	
University of California Berkeley	Lawrence Livermore Lab	Energy Policy	N/A					
		Radioactive Waste	N/A					
	Lawrence Berkeley Lab	Energy Policy	N/A					
		Radioactive Waste	N/A					
	Earl Warren Legal Institute	Building & Housing	N/A					
	Water Resources Center	Air/Water Quality	N/A					
	Institute of Urban & Regional Development	Land Use Planning	N/A					

Institution	Institute	Area of Concern	FC	C	RS	S	PA	AB
Berkeley & Irvine	Institute of Traffic & Transportation Engineering	Transportation	N/A					
Davis	Institute of Ecology	Air/Water Quality	N/A					
Riverside	Citrus Research Center	Land Use Planning	N/A					
	Air Pollution Research Center	Air/Water Quality	N/A					
San Diego	Energy Center	Energy Policy	N/A					
Santa Barbara	Institute of Marine Resources	Coastal Zone Mng.	N/A					
University of Colorado	Co-op Inst. for Research in Environmental Sciences	N/A	N/A					
	Center for Urban Engineering Studies	Transportation	N/A					
		Land Use Planning	N/A					
		Air/Water Quality	N/A					
	Rocky Mountain Mineral Law Foundation	Energy Policy	N/A					
		Land-Use Planning	N/A					
University of Connecticut	Transportation Institute	Transportation	N/A					
	Institute of Urban Research	Land Use Planning	N/A					
	Marine Sciences Institute	Coastal Zone Mngmnt.	N/A					
	Institute of Water Resources	Air/Water Quality	N/A					
University of Delaware	Institute of Energy Conversion	Energy Policy	N/A					
	Urban Affairs	Land Use Planning		•			•	
	Delaware Geological Survey	Power Plant Siting			•			
	Division of Tech. Services	Air/Water Quality		•	•			
Florida State University	Driver & Traffic Improvement	Transportation		•		•	•	•
	Geophysical Fluid Dynamics Institute	Coastal Zone Mng.	•					

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
University of Florida	Florida Agricultural Experiment Station	Energy Policy	•	•	•	•	•	•
		Transportation	•	•	•	•	•	•
		Radioactive Waste			•	•	•	•
		Health Care Systems	•	•	•	•	•	•
		Noise Regulation		•	•	•	•	•
	Institute of Food & Agricultural Sciences	Energy Policy	•	•	•	•	•	•
	Graduate Design Studies	Energy Policy	•	•	•	•	•	•
		Land Use Planning	•	•	•	•	•	
	Engineering & Industrial Experiment Station	Energy Policy	•	•	•	•	•	•
		Transportation	•	•	•	•	•	•
		Land Use Planning	•	•	•	•	•	
		Power Plant Siting	•	•	•	•	•	•
		Coastal Zone Mng.	•	•	•	•		•
		Building & Housing			•	•		
		Radioactive Waste			•	•	•	•
		Air/Water Quality	•	•	•	•	•	•
	Solar Energy Center	Energy Policy	•	•	•	•	•	•
	Wetlands Center	Transportation	•	•	•	•	•	•
		Land Use Planning	•	•	•	•	•	
	Rural Development Center	Land Use Planning	•	•	•	•	•	
	Interdisciplinary Center for Aeoronomy & Atmospheric Sciences	Power Plant Siting	•	•	•	•	•	•
		Air/Water Quality	•	•	•	•	•	•
		Noise Regulation		•	•	•	•	•
	Coastal & Oceanographic Engineering Lab	Coastal Zone Mng.	•	•	•	•		•
	Environmental Programs Cntr.	Air/Water Quality	•	•	•	•	•	•
Georgia Institute of Technology	Environmental Resource Center	Air/Water Quality	•		•	•		•
University of Idaho	Water Resources Institute	Energy Policy		•	•			•

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
University of Illinois	Energy Resources Center	Energy Policy	•		•	•		•
	Highway Traffic Safety Center	Transportation	•		•	•		•
	Bureau of Urban and Regional Planning Research	Land Use Planning		•	•	•	•	
	Small Homes Council/Building Research Council	Building & Housing	N/A					
	Area Health Education System	Health Care Systems	N/A					
	Environmental Studies Inst.	Air/Water Quality		•				•
	Noise Task Force	Noise Regulation	•	•	•	•	•	•
Iowa State University	Energy & Mineral Resources Research Institute	Energy Policy		•				•
	Cntr. Agricul. & Rural Devel.	Land Use Planning		•	•	•		•
		Transportation			•	•		
	Agricultural & Home Econ. Experiment Station	Transportation			•	•		
		Land Use Planning		•	•	•		•
University of Iowa	Institute for Urban & Regional Research	Transportation	•		•	•	•	•
		Land Use Planning	•	•	•	•	•	•
	State Hygienic Lab	Air/Water Quality	•	•				
		Noise Regulation		•	•			•
	Radiation Protection Office	Radioactive Waste			•	•		•
	Environmental Health Services	Noise Regulation		•	•			•
University of Kansas	State Geological Survey	Energy Policy	•	•	•	•	•	•
	Social & Environmental Studies Institute	Energy Policy	•	•	•	•	•	•
		Transportation		•	•	•	•	•
		Land Use Planning	•	•	•		•	•
	Water Resources Institute	Energy Policy	•	•	•	•	•	•

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
	Center for Research, Inc.	Energy Policy	•	•	•	•	•	•
		Transportation		•	•	•	•	•
		Land Use Planning	•	•	•		•	•
		Radioactive Wastes	•	•	•	•		•
		Air/Water Quality	•	•	•	•		•
	Institute for Public Affairs	Transportation		•	•	•	•	•
		Land Use Planning	•	•	•		•	•
University of Kentucky	Office of Business Development & Govt. Serv.	Land Use Planning		•	•			•
		Energy Policy		•				
		Health Care Systems			•		•	
	Real Estate & Land Use Analysis Center	Land Use Planning		•	•			•
University of Maryland	Center of Environmental & Estuarine Studies	Energy Policy	•	•				•
		Power Plant Siting	•	•		•		•
		Coastal Zone Mng.						•
		Air/Water Quality	•	•	•	•		•
	Agricultural Experiment Station	Energy Policy		•	•	•		
		Land Use Planning	•		•	•		•
		Power Plant Siting		•	•	•		•
		Coastal Zone Mng.	•	•	•	•		•
		Air/Water Quality	•	•	•	•		•
		Radioactive Waste			•			
		Health Care Systems	•	•	•	•		
	Bureau of Business & Economic Research	Energy Policy		•				
		Transportation		•				
		Land Use Planning						•
	Water Resources Center	Power Plant Siting		•	•	•		•
		Coastal Zone Mng.	•	•	•	•		•
		Air/Water Quality	•	•	•	•		•
	Chesapeake Research Consortium	Coastal Zone Mng.	•	•	•	•		•
	Institute for Urban Studies	Health Care Systems		•				

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
University of Massachusetts Amherst	Institute for Man & His Environment	Land Use Planning	N/A					
		Coastal Zone Mng.	N/A					
	Health Care Systems Grp: IGS Health Policy Survey Team	Health Care Systems	•	•				•
University of Minnesota	Center for Urban & Regional Affairs	Energy Policy		•	•			•
		Transportation		•	•	•	•	
		Power Plant Siting		•				
		Health Care		•	•	•	•	•
		Land Use	•	•	•	•	•	
		Coastal Zone Mng.		•				
	University Health Service	Radioactive Waste	•	•	•			•
	Council on Environmental Quality	Air/Water Quality			•			•
Michigan State University	Institute of Water Research	Energy Policy	•		•	•		•
		Land Use Planning						•
		Air/Water Quality	•	•	•	•	•	•
		Radioactive Waste			•	•	•	•
		Power Plant Siting	•		•	•		•
	Highway Traffic Safety	Transportation	•		•	•		•
University of Michigan Ann Arbor	Engineering for Public Systems Program	Energy Policy		•	•		•	•
	Highway Safety Research Inst.	Transportation	•	•	•		•	•
	Dearborn Cntr. for Urban Study	Land Use Planning	•	•	•	•	•	

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
	Sea Grant Program	Land Use Planning	•	•	•	•	•	
		Coastal Zone Mngmnt.	•		•	•		
		Power Plant Siting	•					•
		Radioactive Waste	•		•	•		•
		Air/Water Quality	•	•	•	•		•
Wayne State University	Engineering Sciences Inst.	Transportation	•	•				
		Noise Regulation	•	•	•			
	Labor & Industrial Relations	Land Use Planning	•	•				
		Building & Housing	•	•	•	•		
	Michigan Energy & Resources Research Association (Member)	Energy Policy	•	•	•	•	•	•
		Power Plant Siting	•	•	•	•		
Univ. of New Hampshire	Water Resources Center	Air/Water Quality	•					
University of New Mexico	Energy Research Center	Energy Policy		•	•	•		•
	Regional Medical Program	Health Care	•		•	•		•
CUNY—City College	Clean Fuels Inst.	Energy Policy			•			
	Center for Urban & Environ. Problems	Energy Policy			•			
	Oceanography Inst.	Coastal Zone Mngmnt.	•		•			
		Air/Water Quality	•		•			
CUNY—Graduate School	Center for Biomedical Education	Health Care Systems	N/A					
University of Nevada, Reno	Radiological Safety Board	Radioactive Waste			•	•		•
North Carolina State	Water Resources Research	Coastal Zone Mngmnt.	•	•	•	•	•	•
		Land Use	•	•	•	•	•	•
		Energy Policy	•		•	•		
		Air/Water Quality	•	•	•	•	•	•

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
North Dakota State Univ.	Transportation Institute	Transportation	•	•	•	•		•
	Agriculture Exper. Station	Land Use Planning	•	•	•	•		•
	Radiological Control Program	Radioactive Waste			•			•
	Water Resources Research Inst.	Air/Water Quality	•	•	•	•		•
University of North Dakota	Institute for Ecological Studies	Power Plant Siting	•	•	•			•
		Land Use	•	•	•			•
		Air/Water Quality	•	•	•			•
	Social Science Research Inst.	Health Care		•	•			•
Kent State University	Center for Urban Regionalism	Land Use Planning				•		
		Air/Water Quality		•				
		Power Plant Siting						•
Miami University	Environmental Sciences Inst.	Energy Policy			•	•	•	
		Land Use Planning	•	•	•	•	•	•
		Transportation			•	•	•	
		Air/Water Quality		•	•	•	•	
Ohio State University	Engineering Experiment Station	Energy Policy		•	•			•
	Transplex	Transportation	•	•	•	•		•
	Lake Erie Area Research Cntr.	Power Plant Siting	N/A					
		Coastal Zone Mngmnt.	N/A					
		Air/Water Quality	N/A					
	Atmospheric Science Program	Air/Water Quality	N/A					
	Water Resource Center	Air/Water Quality	N/A					
University of Oklahoma	Oklahoma Geological Survey	Energy Policy	•	•	•	•	•	•
		Air/Water Quality	•	•	•	•	•	•
	Water Resources Research	Bldg. & Housing Codes	•	•	•		•	
		Land Use Planning	•	•	•	•		•
		Air/Water Quality	•	•	•	•	•	•
		Power Plant Siting		•	•			

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
	Urban Tech. System Program	Transportation	•	•		•		•
	Cntr. for Urban & Regional Studies	Land Use Planning	•	•	•	•		•
	Oklahoma Biolog. Station	Air/Water Quality	•	•	•	•	•	•
	Fisheries Research Center	Air/Water Quality	•	•	•	•	•	•
	Urban & Community Develop.	Land Use Planning	•	•	•		•	•
		Bldg. & Housing Codes	N/A					
	Ok. Archaeological Survey	Land Use Planning	•	•	•		•	•
	Regional Rehab. Inst.	Health Care Sys.	•	•	•			
	Health Studies Programs	Health Care Sys.	•	•	•	•		
Pennsylvania State Univ.	Pennsylvania Transportation Institute	Transportation		•	•		•	•
	Environmental Acoustics Lab	Noise Regulation				•		
	Noise Control Lab	Noise Regulation	•	•				
	Land Resources Center	Land Use		•				•
		Energy Policy	•	•	•	•	•	
	Center for Air Environment Studies	Air/Water Quality		•	•	•		•
	Water Resources Center	Air/Water Quality		•	•	•		•
		Energy Policy	•	•	•	•	•	
	Energy Programs Coordinator's Office	Energy Policy	•	•	•	•	•	
	Experiment Station	Energy Policy	•	•	•	•	•	
Temple University	Law & Health Sciences Inst.	Health Care Systems		•				•
University of Pittsburgh	Radiation Safety Office	Radioactive Waste			•		•	•
South Dakota State	Water Resources Institute	Air/Water Quality	N/A					
	Energy Experiment Station	Air/Water Quality	N/A					

Institution	Institute	Area of Concern	FC	SC	ES	S	PA	AB
U. South Dakota	Business Research Bureau	Energy Policy	•	•		•		•
		Health Care Sys.	•		•			•
	Center for Environmental Studies	Land Use Planning		•	•			
		Air/Water Quality	N/A					
University of Tennessee	Environment Center	Land Use Planning	•	•	•	•	•	
		Noise Regs.			•	•		•
		Energy Policy	•		•	•	•	•
	Transportation Center	Transportation	•	•	•	•	•	•
	Water Resources Research	Air/Water Quality			•	•		•
Texas A & M University	Texas Water Research Inst.	Air/Water Quality	•	•	•			
	Texas Transportation Inst.	Noise Regulation	•	•	•			
		Transportation	•	•	•	•		
	Office of University Research	Energy Policy		•	•			
	Center for Marine Resources	Coastal Zone Mng.	•	•	•	•		
	Architecture Research Center	Land Use	•	•	•	•		
		Building & Housing	•	•	•	•		
Texas Tech.	Energy Research Inst.	Energy Policy		•	•	•		•
	Mental & Retardation Cntr.	Health Care Systems	•			•		•
	Water Resources Center	Air/Water Quality	•	•		•		•
University of Texas, Austin	Center for Research in Water Resources	Building & Housing	•	•	•	•		•
		Land Use	•	•	•	•		•
		Coastal Zone Mng.	•	•	•	•	•	•
		Radioactive Waste	•	•	•	•		•
		Energy Policy	•	•	•	•		•
		Power Plant	•	•	•	•		•
		Air/Water Quality	•	•	•	•		•

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
	Council for Advanced Transportation Studies	Transportation	•	•	•	•		•
		Energy Policy	•	•	•	•		•
		Health Care	•	•	•	•		•
		Noise Regs.	•	•	•	•		•
	Algal Physiology Lab	Radioactive Waste	•	•	•	•		•
		Air/Water Quality	•	•	•	•		•
		Energy Policy	•	•	•	•		•
	Center for Highway Research	Transportation	•	•	•	•		•
		Noise Regulation	•	•	•	•		•
	Center for Energy Studies	Transportation	•	•	•	•		•
		Power Plant Siting	•	•	•	•		•
		Energy Policy	•	•	•	•		•
		Air/Water Quality	•	•	•	•		•
		Building & Housing	•	•	•	•		•
		Land Use	•	•	•	•		•
		Coastal Zone	•	•	•	•	•	•
		Radioactive Waste	•	•	•	•		•
	Center for Communication Research	Transportation	•	•	•	•		•
		Noise Regulation	•	•	•	•		•
	Population Research Center	Transportation	•	•	•	•		•
		Health Care	•	•	•	•		•
	Radiocarbon Lab	Transportation	•	•	•	•		•
		Land Use	•	•	•	•		•
		Coastal Zone	•	•	•	•	•	•
	Environmental Health Engineering Lab	Transportation	•	•	•	•		•
		Power Plant Siting	•	•	•	•		•
		Air/Water Quality	•	•	•	•		•
		Coastal Zone	•	•	•	•	•	•
		Radioactive Waste	•	•	•	•		•
	Antennas & Propagation Lab	Transportation	•	•	•	•		•
	Aerospace Thin Shell Structures Lab	Transportation	•	•	•	•		•

Institution	Institute	Area of Concern	PC	SC	RS	S	PA	AB
	Marine Science Inst.	Power Plant Siting	•	•	•	•		•
		Air/Water Quality	•	•	•	•		•
		Coastal Zone	•	•	•	•	•	•
	Maximum Potential Building Systems	Energy Policy	•	•	•	•		•
		Building & Housing	•	•	•	•		•
	Earth Sciences & Engineering	Energy Policy	•	•	•	•		•
	Center for Building Research	Energy Policy	•	•	•	•		•
		Building & Housing	•	•	•	•		•
	Center for Fusion Research	Energy Policy	•	•	•	•		•
	Center for Numerical Analysis	Energy Policy	•	•	•	•		•
	Center for Nuclear Studies	Energy Policy	•	•	•	•		•
		Air/Water Quality	•	•	•	•		•
		Radioactive Waste	•	•	•	•		•
	Center for Social Work Research	Health Care	•	•	•	•		•
	Drug Dynamics Inst.	Health Care	•	•	•	•		•
	Anthropological Labs	Health Care	•	•	•	•		•
	Health Services Research Inst.	Health Care	•	•	•	•		•
	Division of Natural Resources and Environment	Air/Water Quality	•	•	•	•		•
		Land Use Planning	•	•	•	•		•
		Coastal Zone	•	•	•	•	•	•
	Structural Mechanics Research Lab	Building & Housing	•	•	•	•		•
	Structures Research Lab	Building & Housing	•	•	•	•		•
	Herbarium	Land Use	•	•	•	•		•
University of Utah	Bureau of Community Dev.	Land Use Planning	N/A					
	Office of Energy Coordinator	Energy Policy	N/A					
	Engineering Experiment Station	Radioactive Waste	N/A					
		Air/Water Quality	N/A					
		Noise Regulation	N/A					
		Power Plant Siting	N/A					

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
University of Virginia	Engineering Sciences Research Labs	Building & Housing	•					
		Transportation	•	•		•		
		Radioactive Waste	•	•				
		Health Care	•	•	•			
	Virginia Highway & Transportation Research Council	Transportation	•	•		•		
		Land Use Planning		•		•	•	•
	Center for Comprehensive Health Planning	Noise Regulation			•		•	•
	Univ. of Virginia Med Center	Noise Regulation			•		•	•
		Health Care	•	•	•			
	Division of Health Science Research	Health Care	•	•	•			
VPI & SU	Energy Research Cntr.	Energy Policy	•	•				
	Urban & Regional Studies	Transportation	•	•				
		Land Use Planning	•	•				
		Power Plant Siting	•	•				
		Bldg. & Housing Codes	•	•				
		Noise Regulation	•	•				
	Ag. Experiment Station	Land Use Planning	•	•				
		Power Plant Siting	•	•				
		Bldg & Housing Codes	•	•				
		Air/Water Quality	•	•				
	Cntr. for Environmental Stud.	Power Plant Siting	•	•				
		Air/Water Quality	•	•				
University of Washington	Environmental Studies Inst.	Energy Policy			•			•
		Air/Water Quality	N/A					
		Noise Regulation	N/A					
	Joint Center for Graduate Study	Radioactive Waste			•			

Institution	Institute	Area of Concern	FC	SC	RS	S	PA	AB
University of Wisconsin Madison	Environmental Studies Inst.	Energy Policy		•	•			•
		Land Use Planning	•	•	•	•		•
		Air/Water Quality		•	•			•
	Sea Grant	Coastal Zone Mngmnt		•	•	•		•
	Marine Studies Center	Coastal Zone Mngmnt		•	•	•		•
	Geographic Analysis Center	Coastal Zone Mngmnt		•	•	•		•
	Urban Land Econom. Cntr.	Bldg. & Housing Codes	•	•	•	•		•
	Environ. Awareness Cntr.	Energy Policy		•	•			•
	Environ. Monitoring and Data Acquisition Group	Air/Water Quality		•	•			•
	Biotic Systems Center	Air/Water Quality		•	•			•

CHAPTER SIX

How One University Serves Its State

The University of California is a great university by almost any measure. A recognized national leader in higher education, it has distinguished itself through the quality of its instruction, research and public service. With nine campuses stretching from Davis in the north to San Diego in the south, it truly covers the diverse state it serves.

Some measures of the university's quality are:

Students

In 1974-75, the university awarded 29,962 degrees, including 3,609 doctorates.

Through the years more National Merit Scholars have chosen to enroll at the University of California than at any other institution in the United States.

Large numbers of graduating seniors have been recipients of the highly regarded Woodrow Wilson and Danforth Fellowships awarded for graduate study. For example, in 1976 seven of the 65 Danforth Fellowships given throughout the nation went to University of California students.

Faculty

The faculty includes 155 of the 1,150 members of the National Academy of Sciences—more than any other university in the country.

There are 14 Nobel Laureates on the faculty.

Young faculty members have been consistently well represented among recipients of Sloan Fellowships for Basic Research. In 1976, 12 fellowship recipients out of the total group of 91 were from UC.

In 1976-77, for the twelfth year out of the past 13, faculty on the Berkeley campus received the largest number of Guggenheim fellowships awarded for independent research of any campus in the country.

In the 1969 study of graduate programs conducted by the American Council on Education, University of California graduate programs were ranked among the top institutions in all of the 36 fields surveyed in the quality of graduate faculty. Eight first-place rankings were given to faculty at UC, Berkeley and that campus was included among the top-ranked institutions in every field but pharmacology—a field it does not offer.

Faculty are engaged in research on almost every topic under the sun, including virtually every public policy issue facing this trend-setting state.

The Public Service Commitment

Along with its distinguished accomplishments in teaching and research, the university's record of service to the state is long and impressive. Chartered in 1868 as the land-grant university for the state of California, its commitment to public service was strong from the beginning. Today, the impact of the university in this area is difficult to measure, but here are some of its contributions:

The university's agricultural research and extension program has been a major factor contributing to the state's abundant productivity of food and fiber.

The university has mounted the largest continuing education program in the nation. Registrations top 200,000 annually in extension programs aimed at almost every segment of society from professionals interested in upgrading their skills and keeping abreast of new developments in their respective fields to persons who have yet to earn their first degree.

Environmental problems facing the state have been of long-standing and growing concern to university scientists. The Air Pollution Research Center at Riverside, featured in Chapter 5, has addressed itself to one aspect of this concern. UC researchers are also engaged in seeking ways to keep redwood forests healthy, to preserve marine life and to keep the state's lakes, such as Lake Tahoe, pure.

Conservation of land in California got a boost from the UC Regents in 1965. The board approved establishment of a Natural Land and Water Reserves System to insure the preservation of some of the state's precious but fast-vanishing resources—its wilderness and wildlife areas. The goal of the program has been to preserve diverse

types of terrain and forms of life throughout California for teaching and research before they are destroyed by the state's explosive population growth.

The university estimates that at least one-fourth of all its faculty members have served in a professional capacity in civic or governmental affairs, advising public agencies and carrying out studies leading to better communities and more effective government. The assistance of university experts has been employed in formulating policy concerning major state problems such as smog control, traffic safety and the use of pesticides.

A Decade of Change

Yet the decade of the Sixties brought changes both within the university and the state which drastically affected the relationship between the two.

The university more than doubled in size. In 1960 there were four general campuses at Berkeley, Los Angeles, Riverside and Santa Barbara. The Davis campus offered instruction primarily in agriculture and science and the campus at San Francisco was devoted to medical science.

In 1965 the San Diego Campus, which had consisted primarily of the Scripps Institute of Oceanography, opened for general undergraduate instruction. A year later, two new campuses at Irvine and Santa Cruz were opened also to offer undergraduate general instruction.

During the decade the enrollment of the university grew from 55,887 to 106,274 while the teaching staff expanded from 3,811 to 7,648. Organized research units also almost doubled from 77 in 1960 to 147 in 1969.

In the midst of this unprecedented growth, the system's largest and original campus at Berkeley (UCLA has since surpassed Berkeley in enrollment.) gave birth to the era of student protest in 1964 with the free speech movement. Several tumultuous years did much to shake the confidence of lawmakers and citizens of the state in their university and the educators who guided it.

Restoring Public Trust

An enormous task of restoring public trust faced the university as it entered the Seventies. State appropriations were not keeping pace with need, and the distrust engendered during the troublesome Sixties did nothing to strengthen the university's position.

There were many in the state who believed that the university was too isolated from the state's problems and consequently was not doing as much as it should as the state's major public university. The national and international renown of many faculty members and the large number of federally funded programs—indicators of the university's academic quality—seemed to some to be evidence that the university valued its national dimensions more dearly than its state mandate.

Many Misconceptions

Within the university as well as outside, there were many misconceptions about what the university's public service role was or should be. Public service as a strong component of the university's operation did not pervade all campuses as it did those which had been part of the early land-grant tradition, according to Academic Vice President Donald Swain, who currently has overall responsibility for the university's public service operations.

"Their instructional development had been largely in areas of strong academic discipline-oriented fields and less in the tradition of public service," he explained. "In many cases the campuses' sense of public service was to do their own thing and assume that they would be, in so doing, performing a public service. Legislators, however, expect more direct benefits from their allocations of public funds for research."

A Complex Legislature

The complexity of the California state legislature posed additional problems for the university. It, like the university, is a trend-setter in its field, constantly coming up with first-of-its-kind legis-

lation on critical public policy issues.

The legislature is served by a professional staff which is larger than the legislature itself—the largest staff within the country. The lawmakers rely heavily on the staff to do the preparatory work necessary for the consideration of new laws. Often the university has been completely forgotten as a source of policy-relevant information.

When questions did come to the university from legislators or their staffs, they were likely to be highly technical in nature—questions which did not lend themselves to the neat, quick answers which the policymakers wanted.

A Need for Action

By 1971 university administrators realized that there was a need for a coordinated approach to the public service aspect of the university's mission. As a result the university named a Vice President for Extended Academic and Public Service Programs who was told to "do something in public service."

The major emphasis of the office for the first two years was in establishing the Extended University, which was designed to service the degree-related educational needs of adults. (This program has now been phased out as a systemwide effort by the university because the state has failed to provide the necessary support.)

In 1973 the office began to focus its attention on university public service. Initially, according to Robert Jones, who has served since 1974 as Director of University Public Service Programs, "that was just about anything the university could do for the public at large."

Analysis of Activity

The first task facing the new office was an analysis of institutional policy and activity related to public service on a campus-by-campus basis. Among the many recommendations coming out of this study were two major proposals:

- The university needed to move beyond the public service initiatives of the individual scholar to a campus and universitywide identification and pursuit of public service goals.
- The president should sponsor a faculty conference for the purpose of reassessing the university's public service responsibilities.

Following the initial report, a more detailed review of current public service policy and its relationship to the university's goals and values was undertaken. As a result of this review, it was decided that universitywide initiatives should concentrate on bridging the gap between two cultures, the academic community and the state government. Disseminating results of recent and impartial research dealing with the state's most pressing problems to policymakers would be the most effective approach, university-wide and campus staff agreed.

"While the findings of research are rapidly diffused throughout the world-wide academic community, there is often a significant but avoidable time lag in dissemination and an additional delay in the use and appreciation of such research by public policymakers and managers," noted Jones.

University personnel saw an additional advantage. This transfer of information would create means by which university researchers would be able to become more fully acquainted with the state's policy issues which are responsive to research.

Faculty Conference

The annual All-University faculty conference at UC is designed to provide an opportunity for members of the university faculty to discuss issues regarding the university and higher education. In 1974 the conference dealt with the theme "Applied and Public Service Research in the University of California."

In his charge to the faculty, President Charles Hitch stated: "Research workers everywhere, and particularly those in public universities in the United States, are being pressed to increase the proportion of institutional research endeavors devoted to the utilization and development of basic knowledge obtained previously. The

conference should attempt to answer the questions: (1) To what lengths can and should a major university go to satisfy that demand. . .? and (2) how might it best organize itself for the task?"

The result of the conference amounted to a faculty endorsement of public service as a legitimate extension of instruction and research. Recommendations called for:

1. A reaffirmation (and acting upon) of the importance of meritorious public service contributions as one of the criteria applied in appointment and promotion.

2. Experimenting with methods for promoting communication between university members, especially faculty, and appropriate outside groups. Among possible methods suggested were:

   a. Periodic conferences between public officials and university researchers on informational needs, to anticipate insofar as possible topics of emerging public policy concern, to define the broader problems of which they are a part, and to explore alternative approaches to them.

   b. Temporary appointments for university personnel to deal with the concerns of the executive and legislative branches and to help these agencies understand the strengths and limitations of the university.

3. Developing procedures that effectively match external service requests with potentially useful research and knowledge of faculty members.

The faculty conferees concluded by proposing that "the president undertake explorations with appropriate public officials of ways whereby such mechanisms for improved communication could be implemented to greatest mutual benefit."

Planning for Public Service

The university's Academic Plan for 1974-78, completed in 1974, also committed the university wholeheartedly to public service. In identifying "special concerns for the 1970s" the plan emphasized that the university has "a clear obligation to help solve problems of the community, state or nation when it has faculty expertise or special facilities particularly applicable to such problems."

Campus academic plans consistent with the overall plan were subsequently prepared. The systemwide public service office was asked to work closely with planners on each campus in developing public service statements and to collaborate with the Academic Planning and Program Review Board staff in reviewing these statements. The first review brought about a number of suggestions for consideration in future annual campus plans.

The Money Problem

Money problems are central to any discussion of academic public service where new initiatives seem necessary. It takes money to arrange for a faculty member to go to the state capitol to provide expert testimony before a legislative committee, to prepare a brochure describing research findings, to hold a meeting to discuss the policy implications of some recently discovered knowledge.

For the University of California, money has been a major issue in efforts to get campus and systemwide programs under way. In its 1974-75 budget request to the state legislature, the university specifically requested funds to assist in the development of a process by which the university's research results and capabilities might be better utilized to enhance the formulation of state public policy.

The request was approved by the state legislature but was vetoed by the governor.

Despite its inability to obtain new state funds, the university decided to go ahead with a program of its own to be funded entirely from Regents' Funds. These are university funds which have come entirely from non-state sources. The regents appropriated $200,000 from this fund for use in getting a program under way during the 1974-75 academic year.

A Beginning

The regents' allocation provided the seed money for a number of experiments in ways to bring university research findings to bear on the development of alternative solutions to public issues.

One of the first specific projects tackled by the systemwide office was the compilation of a directory of organized research units within the university. These units carry out a significant portion of the university's policy-related research, according to Jones. Prior to the development of this document, it was often a task just to determine which unit within a campus might be engaged in research on a given topic.

The directory lists 147 special research units, including a brief description of each and a topical index. It has been distributed to a wide array of public officials and interested agencies of government, including legislative staffs. The availability of the directory means that often a person seeking information can find and contact the proper source in the university without an extensive search.

Research Access Network

Another early activity undertaken by the public service programs office was the establishment of a universitywide research access network. The network is comprised of a representative from each campus as well as the university's

three ERDA-supported (Energy Research and Development Administration) national laboratories. It was set up to facilitate the flow of information both to and from the individual institutions.

Through the network, the systemwide office has been able to secure information on current research projects and faculty expertise related to issues of concern to public policymakers much more readily. At the same time network representatives provide a means of conveying the research and information needs of governmental units to university faculty, students and staff much more rapidly than would otherwise be possible.

Members are designated by the chancellors for the individual campuses and by lab directors. Methods of operating vary from place to place. Some maintain their own campuswide data files for easy reference. A few representatives work with computer-based inventory systems to identify faculty interests and research programs related to matters of public policy. Whatever the individual approach, representatives are asked to respond quickly to specific requests which come in with names of faculty members and information about pertinent research.

Fielding Queries

An example of a specific query that the public service programs office fielded in this manner was a request from the state legislature to identify faculty members who knew something about the nature and scope of white collar crime. Since this was a question not likely to be accommodated by a single research or academic unit, the office made calls to all network members asking them to send back lists of faculty members with expertise in this area. Within a few days this information was in the hands of the legislative staff who could then contact the individuals cited and arrange for expert testimony or whatever other type of information they deemed necessary.

Quarterly Reports

The public service office also began to issue quarterly surveys of extramurally supported (non-state funds) research projects with known or potential relevance to public issues. These surveys are sent to legislative staff people and selected agencies of state government. This process provides assistance to policymakers in learning about research results far in advance of their being published.

For example, after an item concerning research on the incidence of oil spills in the state appeared in the quarterly report, a call came in from a legislative staff person. He had been assigned to assemble the same information. The office was able to put the staffer in contact with the faculty member at the Santa Barbara campus who had already collected the data.

The public service office at times has followed up on requests for information with some type of special service such as arranging for a faculty person to offer a briefing in Sacramento on an issue in which there is legislative interest. This type of response varies according to the request.

These activities, although important as essential supportive elements in getting a program under way, were only the underpinnings of what the university hoped to develop by way of a coordinated approach to governmental public service. The bulk of the funds designated for public service in 1974-75 went into the development of two special programs, the Regents' Research Dissemination Program and the University Council on Energy and Resources—different approaches to carrying the university's enormous wealth of research findings to state policymakers.

Research Dissemination Program

Finding a way to translate existing research into policy-applicable information for easy consumption by lawmakers was a primary assignment for the public service office. The Regents' Research Dissemination Program was developed to meet this goal.

The program, as explained in the introduction, was designed to provide resources, on an awards basis, to campus faculty wishing to develop and implement special and limited-term projects to convey the results of policy-relevant research to state government officials and agencies of government.

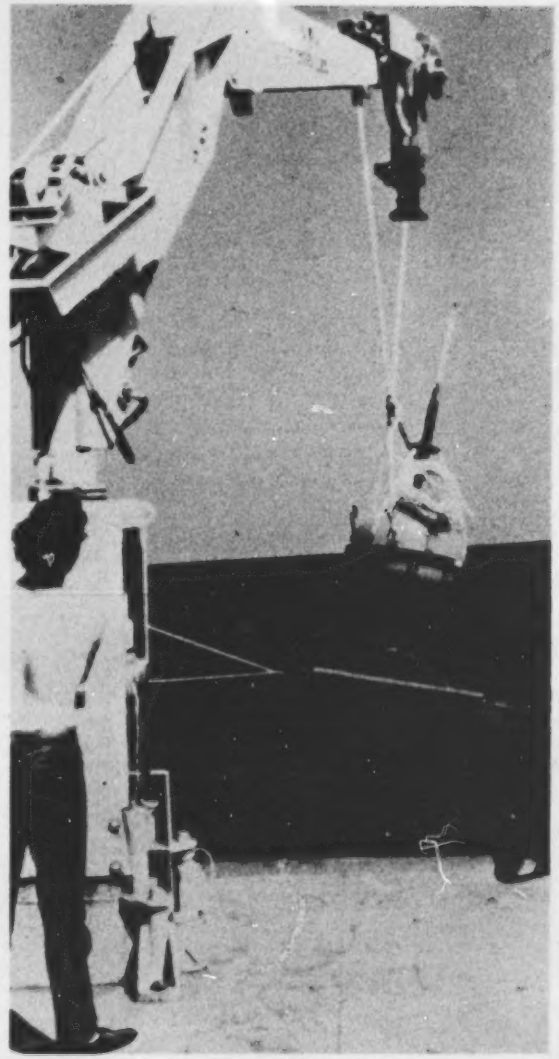
The first projects were funded with $60,000 of the $200,000 designated for the public service office in 1974-75. Twenty-one proposals, dealing with a broad spectrum of issues, were selected, from a group of 49 applicants, to receive the initial grants.

The major criteria for project awards were anticipated benefits to the development of state public policy and the originality of the dissemination techniques. Costs of individual proposals could not exceed $5,000.

All proposals were reviewed with selected state government and universitywide staff to assess the potential policy relevance of the research findings and to identify appropriate state government clients before the awards were made. Faculty on each of the nine campuses and research staff at the Lawrence Berkeley Laboratory received grants.

The funded projects dealt with a wide range of topics. About half of the projects with a substantive focus were concerned with issues related to the environment or energy, a fifth with health or medicine, a fifth with education, corrections or welfare and the rest with government organization and processes. Two projects were designed as pilot attempts to assist the campuses in improving their

Scientists at the Scripps Institution of Oceanography, University of California, San Diego are testing seismic monitoring capsules which can pinpoint even mini-earthquakes in the sea.



overall effectiveness in communicating with public officials about current and on-going research with policy relevance.

Making It Easy

All projects were carried out at the state capitol in Sacramento to make it easy for public officials to participate. The dissemination techniques varied but all but five projects included some type of face-to-face presentation.

Personal contact involving only a small number of participants was rated as the most effective method of presentation by project participants in a follow-up survey of the program, conducted for the public service office by the Survey Research Center at UC, Berkeley. Seventy-one percent of the grant recipients ranked holding a workshop for five to 10 state participants with ample opportunity for questions and discussion as either the first or second most effective presentation technique. Sixty-four percent of the participants ranked meeting individually with three or four selected state officials, legislators or key staff members as the first or second most effective method.

Among those faculty members making personal presentations, the participation they were able to elicit was rated as favorable overall. Seventy-three percent rated participant interest in the topic as excellent. Fifty-five

percent rated the size of the turnout in relationship to the type of presentation as excellent and the same percentage gave an excellent rating to the receptivity of the audience to new ideas or unexpected research results.

However, the policymaking power of the participants in the area of discussion was rated as excellent by only 37 percent of the respondents while an additional 36 percent rated it as good. The lower ratings in this category are probably attributable to the fact that the majority of participants were staff members rather than actual policymakers.

Faculty Response

Faculty response to the initial program was generally enthusiastic.

"We discovered that faculty members are interested in trying to convey information," noted Vice President Swain.

Faculty motives in applying for the program fell primarily into three broad areas, according to the follow-up survey. They were:

To influence the development of state policy.

To improve general relations between the university and the state.

To build continuing relationships with state officials and agencies.

"Some of us were intrigued by the idea of going to Sacramento and telling people what we are doing," said Dr. Robert Spear, an associate professor in the School of Public Health at the University of California, Berkeley, who was involved in one of the initial projects.

He and other faculty members from Berkeley, Davis and Riverside conducted a briefing concerning occupational health hazards to agricultural field workers from foliar pesticide residues. Approximately 30 people, primarily legislative staffers, attended the meeting.

"It was successful from our point of view," observed Dr. Spear. "There were maybe a half dozen people there who now have a name to call if anything comes up."

Since the presentation, Dr. Spear has been asked to comment on proposed legislation dealing with the problem, and he feels that he has established some important on-going contacts with state officials.

Limited Impact

Spear places himself in what he considers to be the large category of faculty who feel that the university must concern itself with state problems. However, he views the impact that the institution can have as limited.

"Initiation from here is unlikely," he observed. "As you get involved in things, however, you see how the priorities of government for funding

research have tremendous impact on what gets done."

Participants in these initial projects agreed that timing and immediate needs of policymakers are the primary determinants of whether a presentation is successful. Dr. Spear noted that his group had decided that the size of their audience would depend on what was in the newspaper at the time.

"If someone had just died as a result of contact with foliar pesticides, the audience would have been larger," he explained.

The university maintained low visibility with the first series of research dissemination projects.

"We didn't attempt to exploit the program," Jones said. "I don't know to what extent the program is known."

Making Ripples

Nevertheless, the first presentations did make some ripples in Sacramento. Some of the projects resulted in research contracts. Virtually all participants have had some follow-up contacts since the completion of their project with state representatives who participated in the original presentations.

Only one grant recipient felt, however, that his project had a major effect in influencing state policy or in alerting the state to new areas requiring policy decisions in the future. But, the follow-up survey pointed out that appraisals of the dissemination projects' limited impact on policy should be viewed in the larger context of policymaking.

"The formation of state governmental policy is generally a lengthy and complex process which must carefully review pertinent information from many sources and consider the consequences of policy changes for a broad range of constituencies. In this larger process, the concentrated inputs of technical and scientific information provided by the dissemination projects would not necessarily have immediately visible consequences."

Program Continues

Although it is undoubtedly too early to measure the overall effectiveness of the program, response to the first projects has been favorable enough to warrant the program's continuation.

During the 1975-76 academic year, 25 additional projects were funded by the university—again dealing with a broad range of issues.

(The chart on the following pages lists all projects funded through the Regents' Research Dissemination Program and the dissemination techniques employed.)

A Timely Project

One of the most timely of the projects dealt with the *Serrano v. Priest* decision. In this nationally publicized case, the California Supreme Court decided that differences in funding levels among school districts created an unequal type of education. The court ruled that the state must equalize this funding.

Lee Friedman, an assistant professor in the Graduate School of Public Policy at Berkeley, decided to set up a student-faculty task force to conduct research concerning various school finance alternatives possible to implement the decision. Students working on the project were volunteers who carried out the work as part of their second-year curriculum.

Friedman received a dissemination grant to allow him to present task force findings to people who would be interested in the results.

"Without the grant I would never have had the resources to duplicate reports, to go to Sacramento and to get the material disseminated so people could use it," he explained.

Each of the ten students participating in the project wrote the equivalent of a master's thesis on one aspect of the problem as assigned by Friedman. Before work began, 12 different people with an interest in the decision came to Berkeley to talk to the students. Included were legislators, representatives from the governor's office, the state department of education and spokesmen for the plaintiff and the defendant.

Learned About Problems

"We learned what the problems were and let them know that we were around," explained Friedman. "We got an enthusiastic response. The main test was that so many people were willing to come to Berkeley."

The papers were completed in June—approximately 1,000 pages in all. Findings included some surprising discoveries such as the fact that only half of the poor people in the state lived in poor (or below average) districts while the other half lived in rich (above average) districts. In addition to providing new information such as this, the task force came up with indexes which could be used in adjusting the size of the tax base to take into account various cost differentials existing between city and suburban districts.

From this wealth of material, a 100-page summary report and an even more condensed four-page summary of findings were put together for distribution to all interested parties. In addition to mailing the report to the various groups concerned with the case, p oject participants also made themselves available to conduct briefings on the findings for any group requesting them—all with funds from the regents' grant.

Efforts such as these are slowly bringing about the kind of information

transfer the university was hoping to achieve at the outset.

Council on Energy and Resources

The research, instructional and public service effort of the University of California in the area of energy and the environment is immense. In 1974, systemwide administrators decided that a major thrust in their new efforts to respond more effectively to public policymakers should be in this area—an area where a lot of pressure had been brought to bear by state government.

The first step in this direction was the formation of a University Council on Energy and Resources. The panel consists of specialists in the area from each of the nine campuses and the three ERDA-supported national laboratories.

"Universities are not well set up to provide energy analysis for government," noted Paul Craig, who left NSF in 1975 to serve as university staff director for the council. "Government officials aren't able to tap into people at universities with good ideas."

Craig has set about to change this communication gap in California. Early efforts of the office have concentrated on two major projects:

Development of the state's proposal for the Solar Energy Research Institute mandated in the Solar Energy, Research, Development and Demonstration Act of 1974.

Development of a proposal for an Energy Conservation Service.

The Energy Conservation Service, as members of the university council envision it, would operate in much the same fashion as the Cooperative Extension Service, in the area of energy conservation. Activities would involve county-by-county or regional efforts to carry energy conservation information from the university into communities throughout the state.

Craig and the council realize that such a broad effort will require extensive funding, probably at the national level, and are working to obtain this support.

Marshal Resources

In addition to the two major programmatic efforts of the council, the membership is set up to marshal resources on their own individual campuses in efforts to provide technical assistance to public officials and agencies and to identify and disseminate research results within the university and to public officials.

The council is also a vehicle for informing the university community of needs of public officials for information on energy. The group serves in addition in an advisory capacity to the university president concerning policies, priorities and goals for

Regents' Research Dissemination Program
1975 Grants

Campus/Unit/Investigator	Subject	Techniques
Berkeley		
International Population and Urban Research Kingsley Davis	Illegitimate Births, Teenage Marriages and Family Instability	Monograph
Department of Social Welfare Steven Segal	Social Integration of Mental Patients	Report/Meetings
School of Public Health Robert Spear	Occupational Health Hazards to Agricultural Field Workers	Briefing
Earl Warren Legal Institute Kenneth F. Phillips	Housing and Welfare of Children	Briefings
Davis		
Institute of Governmental Affairs Alvin D. Sokolow	Implementation and Impact of Proposition 9	Workshop
Irvine		
Public Policy Research Organization Kenneth L. Kraemer	An Inventory Process for Policy Related Research	Monographs/Symposium
PPRO, Graduate School of Administration Program in Social Ecology Kraemer, Geis, Porter, Conner	Techniques for Evaluation of Governmental Programs	Seminars/Reports
Lawrence Berkeley Laboratory		
A. H. Rosenfeld	Improving Fuel Economy of Gas Water Heaters	Report/Technical Briefing
A. H. Rosenfeld	Winter Attic Ventilation for Fuel Conservation	Report/Technical Briefing
Lawrence Livermore Laboratory		
Energy and Resource Planning Group Glenn Werth	Energy Independence of the United States	Briefing

Campus/Unit/Investigator	Subject	Techniques
Los Angeles		
School of Engineering and Applied Science/University Extension A. C. Ingersoll	Urban Growth and Energy Implications: Transportation, Air Quality, Open Space	Executive Briefing
Riverside		
Statewide Air Pollution Research Center James N. Pitts	Air Resources: Particulates and Visibility	Conferences
Graduate School of Administration Catherine Lovell	Federal General Revenue Sharing and California City Fiscal Policy	Seminar/Monograph
San Diego		
Sea Grant IMF James J. Sullivan	State Government Coastal Planning	Task Force
Institute of Geophysics and Planetary Physics John P. Hunt	Non-fuel Mineral Supplies	Symposium
Department of Applied Mechanics Alan M. Schneider	Elasticity of Demand for Gasoline: by Taxation and/or Rationing	Briefings
San Francisco		
Human Development Program Carroll L. Estes	Trends in State Programs and Services for the Elderly	Research/Consultation/ Reports
School of Medicine-Health Policy Program Philip R. Lee	Comprehensive Health Planning and Catastrophic Illness	Seminar
Santa Barbara		
Office of Research Development Henry W. Offen	A Taxonomy for Policy Related Research	Report
Quantum Institute M. S. Manalis	Solar Energy Conversion	Demonstration
Santa Cruz		
Community Studies	Innovations in Correction	Symposium/Information Packet

Regents' Research Dissemination Program
1976 Grants

Campus/Unit/Investigator	Subject	Techniques
Berkeley		
School of Public Health Richard M. Bailey	Economics of the Clinical Laboratory Industry	Conference/Publication
Institute of Governmental Studies John Cummins	State and Local Government Finance	Conference
Graduate School of Public Policy Lee Friedman	Serrano vs. Priest	Option Paper/Mini Reports/ Briefings
Agricultural Extension Service George Goldman	Fiscal Analysis for Local Government Planning	Workshop/Publication
White Mountain Research Station Benjamin W. Grunbaum	Blood Identification Techniques in Law Enforcement	Conference
Sea Water Conversion Laboratory Alan D. K. Laird	Desalination Research	On-site Workshop/ Demonstration
Sanitary Engineering Research Laboratory George J. Trezek	Resource Recovery from Municipal Solid Waste	Briefing
Davis		
Water Resources Center Robert Hagan	Energy and Water	Workshop
Division of Environmental Studies Robert A. Johnston	Land Use Policy	Manuals/Reports/Meetings
Institute of Governmental Affairs John R. Owens	California Campaign Expenditures Data	Technical Assistance/ Seminars
Institute of Governmental Affairs Alvin D. Sokolow	New Federalism and Local Government	Workshop and Publication
Department of Applied Behavioral Sciences Orville E. Thompson	Non-Metropolitan Community Development	Monograph Series
Irvine		
Public Policy Research Organization Ralph Catalano	California Environmental Quality Act	Monographs/Seminar

Campus/Unit/Investigator	Subject	Techniques
Los Angeles		
Institute of Geophysics and Planetary Physics Orson Anderson	Utah Coal and Southern California	Publication
Institute of Industrial Relations Paul Bullock	Comprehensive Employment and Training Act of 1974	Training Workshop
Institute for Social Science Research Howard E. Freeman	Los Angeles County Data Archives	Data Index
Center for the Health Sciences Charles E. Lewis	Assessing the Quality of Medical Care	Manuals/Workshops
School of Architecture and Urban Planning Harvey S. Perloff	Revitalizing the Central City	Policy Papers/Workshop
Graduate School of Management Robert M. Williams	Econometric Models for Forecasting and Policy Impact Analysis	Workshops/Computer Demonstrations
Riverside		
Statewide Air Pollution Research Center O. Clifton Taylor	Assessment of Air Pollution on Plant Communities/Compliance Costs in Air Pollution Control	Workshops
San Diego		
Computer Center E. H. Coughran	Computer Fraud	Training Sessions
San Francisco		
School of Nursing Carroll L. Estes	Aging	Conference
School of Dentistry Samuel J. Wycoff	Preventive Dentistry/Drug and Oral Health	Monograph/Workshop
Santa Barbara		
Center for Chicano Studies Fernando De Necochea	Bicultural Education	Report
Santa Cruz		
Coastal Marine Laboratory Mary Silver	Photoplankton Studies Data Bank	Computer-retrieval/Booklet

research, instruction and public service in the area of energy.

The council has developed a close working relationship with the California Energy Resources Conservation and Development Commission. Council members have worked in partnership with the commission in identifying specific topics for research, development and technological assessment.

To accomplish this goal, the council enlisted faculty members to serve on eight panels set up to develop more detailed specifications of research needs related to unique California conditions, issues and problems. Panel topics included:

Energy Systems

Conservation

Alternate Energy Sources and Fuel Substitutability

Siting of Energy Facilities

Emergency Energy Allocation Strategies

Environment

Energy Policy Studies

Education and Communication

Research panel reports, which described project goals and identified potential researchers, were integrated into one report which was presented to the commission.

It is this kind of cooperation in determining and carrying out research priorities that the university hopes to develop on a much broader scale.

A Goal for the Future

After more than three years of active operation, Robert Jones is happy with the success of the university's new public service efforts overall although he feels that the university still is not called upon for information by policymakers as often as it might be.

"We are effective in a responsive sense, but not in initiating contacts," he summed up. "If we could learn to provide early warning of problems (based upon new knowledge), the program would be more worthwhile."

The battle to obtain state support for new public service initiatives has yet to be won. In 1976 the university tried and failed for the third time to get some state funding for these programs. Another attempt is being made for fiscal year 1977-78.

Both the Regents' Research Dissemination Program and the University Council on Energy had to be funded for 1976-77 at the same level as in 1975-76 and entirely from non-state funds. Until the state is willing to become a funding partner with the university in efforts to build new and enduring linkages between the two, university personnel note that the impact of their new coordinated efforts may not be highly visible or effective except during the two- or three-month period when the dissemination presentations are made.

The goal for the future, therefore, is to develop appropriate policies and mechanisms to foster and maintain linkages which will operate for the benefit of both the university and the state—with both beneficiaries sharing the financial burden.

The Larger Dimension

Activities being coordinated by the university public service office obviously represent only the tip of the iceberg of what the university's nine campuses are doing in terms of service to policymakers. Most of the university's organized research units are involved in research with some policy relevance and have the potential to provide services for government officials. In many cases professional schools and other academic units are fulfilling certain public service objectives. Students are involved through internships, clinical services and volunteer work, and individual faculty members are engaged in contract research related to public policy.

In 1974, for example, the Berkeley campus conducted a campuswide survey of its public service activities and found a large number of faculty and students directly involved in almost every problem area facing the state. The survey also showed that approximately 4,000 students each year worked directly with state agencies or community organizations, either on a volunteer basis or for credit as part of their education.

Two areas where involvement is especially heavy are the university's three organized research units whose activities are primarily concerned with the operations of state and local government and the university's immense Cooperative Extension Service.

Government Institutes

The Institute of Governmental Studies at Berkeley, the Institute of Governmental Affairs at Davis and the Public Policy Research Organization at Irvine are all engaged on a full-time basis in research on public policy issues. As part of their activities they also provide a wide array of technical services.

The largest and oldest of the three units, the Institute of Governmental Studies (IGS), includes a library with one of the largest and most important public policy collections in the nation. The library handles over 1,000 requests for information each year. The library is in regular communication with the Assembly Legislative Reference Service, an arm of the State Library.

IGS also carries out a vigorous publications program as an off-shoot of its research. Publications include six public affairs reports each year on a broad range of policy issues, which receive wide press coverage.

IGS was founded on the Berkeley campus in 1919 as the Bureau of Public Administration. During the successive

crises of the Depression, World War II and postwar readjustment, its research staff engaged in wide-ranging studies on topics recommended for analysis by state legislators and legislative committees.

In 1962, when the name was changed, IGS expanded strongly into a third phase of work, including research assistance to students and faculty members and commissioning specialized monographs.

Effect on Legislation

"Institute-sponsored research and publications have helped guide a number of efforts involving state legislation affecting the San Francisco Bay Area region," noted Dr. Eugene Lee, director of the institute. "For example, Mel Scott's report on the filling of San Francisco Bay was probably the single most important statement which led to the public realization of the potential crisis facing that resource and to the subsequent establishment of the Bay Conservation and Development Commission."

Other Contributions

Some other major IGS contributors to the state have been:

Helping highlight the critical issue of seismic safety and exposing earthquake hazard in California as a major unresolved and virtually ignored policy issue. Institute publications were influential in the creation of statewide legislative and executive bodies to study earthquake hazards, and also helped promote the establishment of an earthquake task force in the Executive Office of the President in Washington.

Conducting major conferences at which problems of state and national concern have been discussed and debated by hundreds of citizens.

Computerization of information from the California Poll, one of the highest quality public opinion polls in the nation. In addition to use by students and faculty, legislative staff have been able, through the program, to assess voter attitudes on a variety of topics.

Sponsorship of a Census Service Facility to make available to state and local government—as well as the academic community—a vast amount of information from the 1970 census which exists only on computer tapes.

In addition to the service aspects of all these activities, the staff spends large amounts of time assisting state and local officials, citizens and civic leaders in small groups or on a one-to-one basis. Staff member John Cummins is assigned full-time to work in the area of public service. He describes his job as "doing anything at all that will make resources of the campus better known and more accessible to government."

Faculty-Government Seminars

One activity has been to hold seminars which bring together government people and faculty members. Seminars have dealt with such diverse areas as housing, tax reform, drought, medical malpractice and land-use planning.

A major benefit that has come out of the seminars, in Cummins' view, has been getting people who are working on a common issue to talk together.

He has received comments such as, "If we didn't have these meetings, the legislation would have taken a lot longer."

Cummins also put together a one-day conference on state and local government finance with the cosponsorship of the League of California Cities. The conference was funded by a 1975-76 Regents' Research Dissemination grant. Participants included state and local government officials, members of the academic and business community and public and private interest groups as well as the general public.

A major task for Cummins is trying to bring legislators and faculty members together. To do this, Cummins feels that a lot depends on his personal knowledge of both parties. He has to know if the two people can talk together. He views his job as laying the groundwork.

"They really have to trust me," he noted. "If they do, I can facilitate things."

Juggling Problems

The multifaceted activities of the institute are extremely demanding for the staff and not without some juggling problems which are common to all institutes of government.

"The attempt to maintain the bridge is not always easy, and the effort to provide both research and service carries a price, which should be clearly understood," Dr. Lee emphasized. "Energies devoted to consultation with state officials on earthquake hazard policy, for example, may be at the expense of faculty research. Efforts to serve students may be at the expense of assistance to Bay Area civic leaders in resolving their differences over regional problems.

Fire research at the University of California, Santa Barbara, will aid fire fighters in predicting behavior of fire brands. Engineering professor William Kuby studies graphs showing activity within swirling cone of simulated forest fire.

"Demands sometimes heard to expand both teaching and service activities, and to continue the basic research that makes both possible, carry with them an element of inconsistency. If we try to meet all the demands, we may do nothing well."

Yet Dr. Lee does not believe that an organized research unit that deals with government and public policy as its subject area can afford to ignore any of these demands.

"The research organization that cannot give constructive assistance when policymakers are confronted with difficult real problems loses credibility with its outside clientele groups," he warned. "Moreover, involvement in community affairs is probably essential

to a realistic understanding of what is going on, without which research risks losing both relevance and penetration."

Institute of Governmental Affairs

The Institute of Governmental Affairs (IGA), founded on the Davis campus in 1962, also investigates policy-oriented questions, especially those related to the impact of law and public policy on society. It carries out a publications program of inexpensively produced documents on a wide range of governmental issues and also includes a research library which operates a social science data service.

"We are turning more toward dissemination," said Al Sokolow, professor of political science at Davis and associate director of the institute. "I would like to see a campuswide network set up to respond to outside needs with the institute serving as the key link in the system."

A group from IGA organized a workshop dealing with the effects of implementation of the state's Political Reform Act of 1974 with one of the first Regents' Research Dissemination grants. The workshop brought together academicians doing research in the area and people responsible for carrying out the law or affected by the law. The workshop stimulated additional and on-going research on the problems.

In 1975-76 the institute was involved in two dissemination projects—a workshop and publication on the subject of "New Federalism and Local Government" and a series of seminars, supplemented with technical assistance from institute staff members, on California campaign expenditures data.

Public Policy Research Organization

The Public Policy Research Organization (PPRO) at Irvine, which is only ten years old, is a facility designed to initiate, conduct and utilize research on international and domestic problems of public policy.

The organization focuses its work on two objectives: (1) Research contributing to improved policymaking, nationwide, for city and county governments through utilization of modern information technologies and (2) research leading to improved nationwide capabilities for evaluation of the consequences of public programs and policies.

"During the past few years we have been turning an increasing amount of attention toward dissemination of results to the practitioner world," observed Dan Appleton, assistant director of PPRO. "The value of our work rests very heavily on our ability to move it to users."

Most dissemination activities have centered on the preparation of working papers and articles for publication in specialized magazines, such as *Nation's Cities*, published by the National League of Cities. This magazine devoted one issue to work being carried out at PPRO. The institute has also put together some presentations for conferences of associations for city and county officials who would have an interest in its work.

PPRO has been involved in three Regents' Research Dissemination projects. During the first year, with Regents' funds, they designed a computer-based process for developing an inventory of policy-related research for the Irvine campus.

Employing Sophisticated Techniques

In another project during the first year, PPRO defined as its purpose "to insure that California planning and budgeting operations. . . employ the most sophisticated program evaluation techniques available anywhere." To accomplish this goal, four faculty members conducted a series of interviews with government officials concerning the types of evaluation procedures they are currently using. This was followed up with a draft report showing the findings along with recommendations for improvement. This was given to the officials interviewed for comments before the final report was completed.

The report was then distributed widely to state government officials. The response has been extremely good, according to Appleton. The faculty

members engaged in the study have been called on frequently since the report came out to visit state organizations to show them how the recommendations might apply to that unit.

In 1975-76, PPRO received a grant to disseminate information on how well local governments in California were complying with requirements of the California Environmental Act. Findings were reported in a series of monographs followed up by a seminar for state officials.

Policy Research

PPRO faces similar problems to those voiced by representatives of other organized research units of this type.

"Policy research is close to applied research, and it is harder to get professional recognition for work in applied research," explained Appleton. "The awards system is geared toward basic research. Therefore, finding faculty members who will give the necessary time can be difficult.

"We must continue to work to change our methods to improve utilization," he concluded.

Cooperative Extension Service

The university's Cooperative Extension Service has what is probably the closest working relationship with state government of any university unit. The service is constantly fielding requests from Sacramento and is called on frequently to testify at hearings pertaining to agriculture and the environment.

One area where the service has been especially active is in water policy. Vice President for Agricultural Sciences, James B. Kendrick, Jr., set up a Committee of Consultants several years ago for the specific purpose of working with all agencies of state government in this area. The group of 25 members, all of whom are experts in the area, is divided into task forces to attack particular problems. One major activity has been work on the Coastal Commission plan for the utilization of land from the high water mark 1,000 yards inland.

Much of what the extension service contributes to the state has long-term implications for policy. For example, in 1954 the extension service was asked by the legislature to review the state milk law. The subsequent study has been a bellwether for 20 years as a resource document in the state.

A more recent activity undertaken at Davis is the establishment of a community development program to work with the multitude of regional agencies in helping them determine priorities. The program has as its goal helping these agencies to make decisions in a more enlightened framework.

Despite its widespread activity in the public policy area, the extension service does not want to lose sight of what a university can and cannot do.

"The university can't be in a position of saying what public policy ought to be," explained Jerry Siebert, assistant director of Cooperative Extension. "The question of how the university gets into the public framework is difficult. We can publish research results and send them to Sacramento. I don't think we can go in and pound the desk."

Facing the Future

As one of the nation's largest institutions of higher education, the University of California faces many problems in serving state government which do not pertain to smaller institutions. On the other hand, its capacity to serve is undoubtedly above average.

University administrators believe they have made a start at coming to grips with internal problems hampering university/governmental cooperation. What lies ahead depends entirely on how well the university and the state can continue to come to terms with their differences and capitalize on the enormous benefits which can come from their partnership.

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The Challenge of the Future

Providing scientific and technical information to state and local government through some type of formal unit is a part of the service function for almost all of the state and land-grant universities participating in the NASULGC survey.

Although approximately half of the respondents did not have a formal technical services unit, most of those which did not provided at least a few technical services through organized research units dealing with the designated public interest categories. The six predominately black institutions responding to the survey were the only participants which did not have at least some technical services activity. These institutions do not currently have research programs of sufficient magnitude to warrant the establishment of technical services units.

All but two of the twenty institutions without technical services units which responded to a question on the feasibility of such a unit thought that it was either extremely necessary or of some value. Eight indicated that they felt such a unit was very necessary while ten others felt a unit would be of some value.

Rating Activity

Asked to rate overall university activity to inform/assist state government personnel and policymakers regarding issues or areas of research applicable to societal problems, about half of the respondents indicated at least some dissatisfaction with their efforts while the other half rated their efforts as good. Responses to this question from 61 campuses showed that 30 rated their activity as good, 19 rated it as fair, nine said it was poor and three noted that it was non-existent.

Even when activity was rated as good, additional comments indicated that many universities still feel there is room for improvement. The major concern seemed to be a lack of coordination, as two comments illustrate.

The University of Virginia said:

"There is a wide variety of highly qualified faculty who can provide important assistance to state government, but mechanisms for doing this are highly decentralized and therefore somewhat uncertain."

The University of Minnesota, expressing the same view of the situation on its campus, said:

"With the current wide array of activities, both formal and informal, it is impossible to gather comprehensive information about the university's total response to the needs of state and local government agencies. A more formal organization to keep

track of these activities would be most helpful, but it seems doubtful that an organization of this type could or should attempt to manage all the interactions, current or potential, between university units and government agencies."

Programs such as Penn State's PENNTAP and the University of Tennessee's Institute of Public Service are examples of a broader concept of service patterned after the country agent/Cooperative Extension model. The need for more programs of this type seems evident.

Promising Too Much

Since the commitment to an organized approach to providing needed assistance to government seems to be established, the goal for the future for most of these universities concerns how to improve upon what they are already doing without losing sight of their distinct responsibilities as institutions of higher education.

These universities appear already to have come a long way from the tumultuous Sixties. James Bonnen of Michigan State University, who conducted a study on the role of the university in public affairs for the Carnegie Institute, found that, in general, universities in the 1960s were promising more than they could deliver. Dr. Bonnen found that few universities combined research and outreach effectively in trying to cope with problems of society. He concluded that there is no simple formula for what a university should do in the area of public service and advised each university to adapt to the situation it faced.

Results of the NASULGC survey and insights gained from a large number of interviews with university faculty and staff engaged in public service activities bear out Dr. Bonnen's conclusions. The most effective programs have one characteristic in common. They have been conceived to meet the unique political, social and technological needs of the areas they serve.

Limited View

This report offers a limited view of the efforts of state and land-grant universities to provide technical services to state and local government through formal units. Approximately 40 percent of NASULGC member universities did not respond to the survey. At least some of the universities not responding are known to have active technical services operations.

Among the participating universities, some institutions did not provide complete information on their technical services activities.

Despite these limitations, this report does provide valuable insight into the most prevalent types of activities underway across the country as well as giving some idea of the scope of many individual efforts.

Based on survey results, on news releases from universities and on personal interviews, the types of services which universities seem to be providing most effectively for government include:

Publication of special reports on topical issues.

Sponsorship of seminars, workshops and short courses for government officials.

Development of evaluation tools for use by various units of government in assessing their services.

Publication of business and economic reports dealing heavily with the effect of various factors on the state's economy.

Contract research on topics specified by governmental units.

A Continuing Problem

Money problems will continue to play a decisive role in what universities will be able to do in the future. Bare state coffers and correspondingly spare campus budgets require the development of new service-oriented initiatives which can operate for the most part with already existing funds. However, since most successful technology transfer programs seem to require the services of a full-time staff, the establishment of many new programs in the absence of new funding seems highly unlikely.

The awareness of government of the value of increased interaction with the universities within its area is growing, judging from the responses from most universities. In many cases the realization of the value of this resource is still too recent to have made an impact. In the words of one respondent:

"We have been interested and able to provide such assistance and advice. Only recently has the state come to recognize the value of such interaction."

As relationships grow, funding problems may diminish as legislators become increasingly willing to pay for something which will provide them with such rich dividends.

Yet money is not the only problem facing universities in serving government. University policies related to faculty still do not favor public service as heavily as they favor research, survey results pointed out, and many faculty members do not feel that they can afford time away from research for public service activity if they are to advance in their chosen fields.

Potential Hazard

The need of policymakers for immediate information also carries with it a potential hazard for universities as scholarly institutions, many educators fear. Dr. Lorene

Rogers, president of the University of Texas, Austin, summed up this fear when she said:

"One important function of any university is the creation of new knowledge. Therefore, it must be future-oriented as well as now-oriented. We in the universities must never become so occupied with applying the knowledge we have to today's problems that we have no time to create new knowledge for the solution of tomorrow's problems."

Yet despite the delicate balance which universities must maintain, there appear to be very few within state and land-grant universities today which actually question the validity of this multi-functional role.

Former president John Lederle of the University of Massachusetts once emphasized the potential he saw for the university to attack effectively problems such as air pollution, transportation, public health.

"No other institution in society has the combination of talents and specialized knowledge, the information retrieval potential, that the university brings to these great problems," Dr. Lederle said. "At the core of the land-grant principle is the marriage of theory and practice, of conceptualization and application. The university is the only institution which can bring these seeming conflicting elements together."

It was—and is—the challenge of the future.

Page 4 California State Capitol. Photo courtesy of University of California. *Page 10* Rotunda of Michigan State Capitol. Photo courtesy of University of Michigan, Ann Arbor. *Page 17* Courthouse steeple. University of Tennessee. *Page 26* University of Arizona, Tucson. *Page 29* Pennsylvania State University. *Pages 30, 31, 33, 35* University of Tennessee, Institute of Public Service. *Pages 37, 39, 40, 41* Pennsylvania State University. *Page 42* University of Missouri, St. Louis. *Page 47* Ohio State University. *Page 49* Pennsylvania State University. *Page 56* University of Texas, Austin. *Page 58* University of Tennessee. *Pages 74, 80 and 90* University of California. *Page 93* Pennsylvania State University.